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THE RESULTS OF ROUTINE INVESTIGATION FOR Rh FACTOR AT THE N.W. LONDON DEPOT*

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Since Oct., 1942, this laboratory has undertaken to supply Rh-negative blood for transfusion purposes and to determine the Rh group of samples submitted for test. In the course of such routine investigations information has been accumulated on the incidence and clinical importance of the Rh factor. This is analysed below under the following headings: (I) The incidence of the Rh factor in Group O donors. (II) Results of examination of samples submitted from families giving a history suggestive of haemolytic disease of the newborn. (III) Routine serological investigation of unselected women attending an antenatal clinic. (IV) Serological investigation of reactions following transfusion reported to the laboratory.

Methods

Test for Rh Factor in Red Cells.—Both cells and serum from samples submitted for test for Rh factor were first examined for their ABO group, using the tile technique (M.R.C. War Memorandum No. 9). The test for Rh factor was carried out in small test-tubes, 2 in. by 1/4 in., using one drop of anti-Rh serum of suitable ABO group or serum neutralized by saliva, and one drop of a weak cell suspension. The tubes were then covered with small glass caps and left in the incubator at 37° C. for two hours. After looking at the cell sediment one drop was carefully removed from the bottom of each tube and spread on a clean side. If no agglutination could be seen macroscopically, microscopical examination followed. Controls with two known Rh-positive bloods and one known Rh-negative blood were included in each test. From Oct., 1942, until Jan., 1944, the cell suspensions were put up against three different potent anti-Rh sera of appropriate ABO group. The cell suspensions were called Rh-positive if they were agglutinated by one or more of the test sera. After Jan., 1944, the cell suspensions were tested with one known potent anti-Rh serum only. Those which showed no agglutination with this serum were then tested with one known potent anti-Rh′ and anti-Rh″ serum.

Tests for Anti-Rh Agglutinins in Serum.—Tests for anti-Rh agglutinins were carried out by putting up the patient's serum in dilutions of from 1 : 1 to 1 : 512 against two suspensions of known Rh-positive Group O red cells (Rh_1Rh_2 and Rh_2Rh_2 (or Rh_2rh)), one suspension of known Rh-negative Group O red cells, and a suspension of the patient's own cells. In maternity cases the patient's serum was also tested against the baby's red blood cells if these were available and of compatible ABO group. Serum from cord blood was tested for anti-Rh agglutinins whenever possible. Tests for blocking antibodies (Wiener, 1944) or incomplete antibodies (Race, 1944; Race and Taylor, 1944) have been carried out only recently on sera of Rh-negative patients which contained either weak anti-Rh agglutinins or no anti-Rh aggultinins.

I. Incidence of Rh Factor in Group O Donors

In order to obtain a regular supply of Rh− blood for routine transfusion purposes and to build up a panel of known Rh− donors 5,837 unselected Group O donors have been tested. In the case of the first 2,944 donors tested only anti-Rh serum was used. In this series 2,472 (84%) were Rh+ and 472 (16%) were Rh−. The later 2,893 donors were tested with anti-Rh, anti-Rh′, and anti-Rh″ serum: 2,411 (83.3%) were Rh+, 432 (14.9%) were Rh−, 30 (1%) were Rh′, and 20 (0.7%) were Rh″. The sera from donors were not tested for anti-Rh agglutinins.

II. Examination of Samples submitted from Families giving a History suggestive of Haemolytic Disease of the Newborn or in whom Anti-Rh Agglutinins were found

Specimens of blood were received from 624 women with a history suggestive of haemolytic disease of the newborn or with a history of repeated stillbirths or miscarriages. In 133 instances the history suggested haemolytic disease of the newborn, as evidenced by the statement that the present or previous infants had anaemia, icterus gravis, hydrops foetalis, erythroblastosis foetalis, kernicterus, haemolytic disease, or early jaundice. In 3 women with a history of repeated miscarriages or stillbirths anti-Rh agglutinins were found; they are therefore included in the following analysis. The complete serological investigation of the remaining 488 specimens will form the subject of a further communication.

The term "Rh-negative" in the following paragraphs includes Rh′ and Rh″ subgroups, as the majority of the cases were investigated before the subgroups were recognized. The subgroups have been mentioned in the last column of Table I whenever they have been tested for.

An analysis of the table shows that 120 (88.2%) of the 136 women with either a history or serological findings suggesting haemolytic anaemia in an infant were Rh-negative and 16 (11.8%) Rh-positive. The Rh-negative mothers belonged to the following blood groups: Group O, 46 (38.3%); Group A, 60 (50.0%); Group B, 8 (6.7%); Group AB, 6 (5.0%). It proved possible to test only 85 husbands of the above 120 Rh-negative women; all but one were Rh-positive. The latter father could not be re-tested to determine if he belonged to one of the Rh subgroups. The 84 Rh-positive husbands belonged to the following blood groups: Group O, 50 (59.5%); Group A, 27 (32.1%); Group B, 4 (4.8%); Group AB, 1 (1.2%); unknown, 2 (2.4%). The red cells of only 55 affected babies with Rh-negative mothers were available for examination; 53 were Rh-positive, and 2 belonged to subgroup Rh′ (Table I, Cases 59 and 79).

* A report to the Medical Research Council.

TABLE I.—*Cases Suggestive of Haemolytic Disease of the Newborn*

KEY TO TABLE.—M., Male. F., Female. A.W., Alive and well. D., Died. Surv., Survived. I.G.N., Icterus gravis neonatorum. E.F., Erythroblastosis foetalis. J., Jaundice. S.B., Stillbirth. Misc., Miscarriage. H.F., Hydrops foetalis. Prem., Premature. Prog. an., Progressive anaemia.

Family No.	Mother's Age When Tested	Mother's Group		Father's Group		Mother's Serum		Pregnancies					Notes
		Rh	ABO	Rh	ABO	Anti-Rh	Time When Tested	1	2	3	4	5, 6, 7, and 8	
1	31	–	A	+	O	1:16 1:32 1:4	7 days 14 days 2 mths. } after del.	1938 A.W. Gp. O Rh+	1942 E.F.: D. few mins.				
2		–	B	+	O	1:4	9 days after del.	F. 1939 A.W. Gp. O Rh+	1942 I.G.N.: D. 5 days	1943 Therapeut. abortion Gp. O Rh+ 10/52	M. 1944 H.F.: D. 15 min.		Mother's anti-Rh 1:16 8 months after 2nd child
3	28	–	A	+	O	1:64	4 mths. after del.	M. 1934 A.W. Gp. A Rh+	M. 1936 J.: D. 10 days	M. 1938 S.B.	M. 1940 J.: E.F. D. 1 day	(5) F. 1942 E.F.: D. 1 hour	
4	39	–	B			1:16	2 yrs. after del.	F. 1923 A.W. Gp. O Rh+	F. 1926 J.: surv. Gp. O Rh+	F. 1928 J.: surv. Gp. O Rh+	F. 1940 J.: surv. Gp. O Rh+		2nd and 4th children had blood trans. 3rd child now deaf and dumb
5		–	A	+	A	1:256	1 mth. after del.	Misc.	1942 I.G.N.: D. 5 days				P.M. report: Kernicterus
6	28	–	A			1:4	14 days after del.	M. A.W. Gp. O Rh+	1938 J.: D. 7 days	1941 S.B.	1943 S.B.: prem.		Mother's W.R. positive. 4th child: death due to? syphilis or E.F. (no P.M. to clarify this). 1st child illegitimate
7	35	–	A			1:128	1 mth. after del.	F. 1931 A.W. Gp. A Rh+	M. 1933 J.: D. 4 days	M. 1934 S.B.	F. 1936 J.: surv. Gp. A Rh+	(5) F. 1938 J.: D. 9 days (6) F. 1940 J.: D. 8 days (7) 1941 S.B. (8) 1944 I.G.N.: D. 7 days Gp. A Rh+ Convulsions	4th and 8th children had blood trans. No anti-Rh in last baby's cord blood
8		–	AB			1:4	10 days after del.	F. 1935 A.W. Gp. A Rh+	F. 1937 A.W. Gp. A Rh+	1942 I.G.N.: surv. Gp. B Rh+			3rd child had a blood transfusion
9		–	A	+	O	1:1 –	During preg. After del.	F. 1926 A.W.	M. 1928 A.W. Gp. A Rh–	F. 1931 S.B.: ascites	M. 1932 S.B.: J.	(5) F. 1935 S.B. (6) M. 1939 S.B. (7) M. 1940 E.F.: D. soon after birth (8) 1943, A.W. Gp. O Rh–	7th child: P.M. confirmed E.F. Mother's anti-Rh titre 1:32 2 years after 7th pregnancy
10		–	A			1:2 –	3 wks. before del. 13 days after	F. 1931 S.B.	M. 1932 A.W. Gp. A Rh+	M. 1934 S.B.: prem.	F. 1935 S.B.: H.F.	(5) M. 1936 S.B.: H.F. (6) F. 1940 S.B.: H.F. (7) 1941 S.B. (8) 1944 E.F.: D. 5 hours Gp. O Rh+	1st preg. forceps delivery. 8th preg. blood trans. Enlarged liver and spleen. No anti-Rh in cord blood. Mother's anti-Rh after 7th preg., 1:512
11		–	A			1:8	? mth. after del.	M. 1929 A.W.	M. 1930 A.W.	F. 1939 A.W.	F. 1942 Severe an. Surv.		4th child had blood transfusion
12	28	–	A	+	O	1:1	1 mth. after del.	1939 A.W. Gp. A Rh+	1942 Severe an. J. at birth Surv. Gp. A Rh+				
13		–	AB	+	O	–	days after del.	D. few hrs.	D. (dysentery)	1942 I.G.N.: D. 15 days Gp. B Rh+	1944 A.W. Gp. B Rh–		3rd child had blood trans. Mother's anti-Rh at that time 1:4
14	34	–	A	+	O	1:512	11 days after del.	M. 1937 A.W. Gp. O Rh+	1941 I.G.N.: D. 3 days	1943 S.B.: H.F. Gp. O Rh+			Anti-Rh agglutinins present in mother's serum during pregnancy; increasing
15	26	–	A			1:512	8 days after del.	M. 1938 A.W. Gp. O Rh–	M. 1940 A.W. Gp. O Rh+	1942 E.F.: D. few hrs.			
16		–	A			1:8	1 wk. after del.	F. 1927 A.W. Gp. O Rh+	F. 1929 A.W. Gp. A Rh+	M. 1942 I.G.N.: surv. Gp. A Rh+			3rd child had blood trans. This child is by the second husband
17		–	O			1:512	3 wks. after del.	D. melaena	J.: D.	1942 I.G.N.: surv. Gp. O Rh+			3rd child had blood transfusions
18		–	O			–	11 mths. after del.	1938 S.B.	Misc.	Misc.	1940 Prem.: D. 4 hours	(5) Misc. (6) 1942 J.: surv.	
19		–	A			1:2048	2 wks. after del.	A.W.	1943 I.G.N.: surv. Gp. A Rh+				2nd child had blood transfusion

TABLE I (*continued*)

Family No.	Mother's Age When Tested	Mother's Group		Father's Group		Mother's Serum		Pregnancies					Notes
		Rh	ABO	Rh	ABO	Anti-Rh	Time When Tested	1	2	3	4	5, 6, 7, and 8	
20	48	–	O			–	9 years after del.	F. 1914 A.W. Gp. O Rh +	M. 1916 J.: D.	M. 1918 A.W. Gp. O Rh –	M. 1920 J.: D.	(5) F. 1924, I.: D. (6) F. 1927, J.: D. (7) F. 1930 J.: surv. (8) F. 1934 J.: D.	First 3 children by 1st husband; 3rd child is reported to have had jaundice as baby. All deaths from jaundice occurred between 3rd and 15th days
21		–	A			Not available		S.B.	S.B.	S.B.	I.G.N.: D.		Sister of No. 16
22		–	A	+	B	–	During and after 2nd preg.	Haemorrh. disease D.	F. 1943 A.W. Gp. B Rh –				
23	36	–	A	+	O	Not available after last preg.		1943 Prog. an.: surv. Gp. A Rh +	1944 A.W. Gp. A Rh – *				Anti-Rh agglutinins in mother's serum after 1st child, 1 : 4096. *2nd child Rh"
24		–	A	+	O	1 : 256	6 days after del.	1940 A.W. Gp. A Rh +	1943 Prog. an.: surv. Gp. A Rh +				2nd child had blood transfusion
25	31	–	O	+	O	1 : 2	During preg.	I.G.N.: D. 5 days	1943 I.G.N.: surv. Gp. O Rh +				2nd child had several blood transfusions
26		–	O	+	O	1 : 1	Few days after del.	A.W.	A.W.	A.W.	A.W.	(5) 1943, Twins E.F.: D. 3½ hrs. A.W. Gp. O Rh –	
27	23	–	A			1 : 256	Few days after del.	A.W.	1943 I.G.N.: surv.				Both children are illegitimate by different fathers. 2nd child had blood transfusion
28		–	A	+		1 : 1	5 days after del.	1935 A.W.	1936 A.W.	1937 D.: transv. pres.	1939 S.B.: H.F.	(5) 1940 S.B.: H.F. (6) 1942 S.B.: H.F. (7) 1943 S.B.: H.F. Gp. A Rh +	Father reported to be Rh +
29	39	–	A			1 : 1	?	F. 1928 A.W. Gp. A Rh –	Misc.	Misc.	Misc.	(5) 1943 H.F.	Mother's serum tested within first 10 days
30	29	–	A	+	A	1 : 1	10 days after del.	F. 1936 A.W. Gp. A Rh –	F. 1938 A.W. Gp. A	1941 Misc.	1943 S.B.: prem.		Not enough blood to test 2nd child
31		–	AB	+	O	1 : 4	19 days after del.	M. 1934 A.W. (prem.) Gp. B Rh +	F. 1934 A.W. Gp. B Rh +	1943 I.G.N.: surv. Gp. B Rh +			Mother: severe rigor after 10 c.cm. of A blood. Maternal grandmother: Gp. B Rh +
32	33	–	A	+	O	1 : 1	1st week after del.	A.W.	1943 I.G.N.: D. 2 days				
33	23	–	O	+	O	1 : 2	14 days after del	M. 1941 A.W. Gp. O Rh +	F. 1943 I.G.N.: surv. Gp. O Rh +				Mother's serum showed zoning. 2nd child had blood transfusion
34	21	–	O	+	A	1 : 512	1 day after del.	M. 1943 I.G.N.: surv. Gp. O Rh +					Baby's serum contained anti-Rh 1 : 8. Baby had several blood transfusions. Mother's serum still contained anti-Rh agglutinins 1 : 256 after 7 months
35		–	A	+	O	1 : 512	13 days after del.	M. 1936 A.W. Gp. A Rh +	F. 1943 I.G.N.: surv. Gp. O Rh +				2nd child had blood transfusion
36	30	–	A	+	A	1 : 16	13 days after del.	M. 1937 A.W.	M. 1939 A.W.	M. 1941 Prem. twins D.	1943 A.W. Gp. A Rh –		Mother's serum contained higher anti-Rh agglutinins at end of pregnancy
37	24	–	B			1 : 32	1 week after del.	D. (vit. K deficiency)	A.W.	1943 Prog. an.: surv. Gp. B Rh +			All children are illegitimate by different fathers
38		–	AB	+	O	1 : 1	Few days after del.	1942 S.B.	1943 H.F.				
39	30	–	A	+		1 : 2	3 days after del.	M. 1933 A.W.	M. 1935 J.: D. 3 days	M. 1936 J.: D. 5 days	F. 1937 J.: D. 3½ mths.	(5) M. 1940, A.W. (6) F. 1941, A.W. (7) M. 1943 J.: surv. Gp. A Rh +	7th child had blood transfusion. Father and two children reported to be Rh +. Impossible to get further information
40		–	O	+	A	–	7 days after del.	F. 1930 A.W. Gp. O Rh +	1932 S.B.	1933 S.B.	1935 S.B.	(5) 1936 D. 5 days (6) M. 1938 A.W. Gp. O Rh + (7) 1941, S.B (8) 1943, A.W. Gp. O Rh +	Mother's serum contained anti-Rh agglutinins (1 : 2) during preg.; none after del.; also high anti-A titre (1 : 1024). All living children Gp. O

TABLE I (*continued*)

Family No.	Mother's Age When Tested	Mother's Group		Father's Group		Mother's Serum		Pregnancies					Notes
		Rh	ABO	Rh	ABO	Anti-Rh	Time When Tested	1	2	3	4	5, 6, 7, and 8	
41	32	−	O	+	O	1:32 1:256	1 day after del. 14 days after del.	F. 1928 A.W.	M. 1930 A.W.	1932 J.: surv.	M. 1935 S.B.: macerated	(5) F. 1938 S.B.: H.F. (6) M. 1943 E.F.: surv. Gp. O Rh+	6th child had blood transfusion. All the other surviving children evacuated to U.S.A.
42		−	A	+	A	1:32	During preg.	S.B.	S.B.	I.G.N.: D. 36 hours	1943 I.G.N.: D. 52 hours Gp. O Rh+		Last baby delivered by Caesarean section; born jaundiced; had 3 blood transfusions
43		−	A			1:32	4½ yrs. after del.	M. A.W.	F. I.G.N.: D.	F. 1939 I.G.N.: surv.			3rd child had blood transfusion
44	35	−	O			−	20 mths. after del.	S.B.	S.B.	1941 I.G.N.: surv.			3rd child had several blood transfusions. Mother had severe reaction after transfusion with blood not tested for Rh
45	29	−	A	+	A	1:32	5 days after del.	M. 1935 A.W. Gp. O Rh+	M. 1936 Twins, A.W. Gp. A Rh+	1943 Prog. an.: D. 4 days			P.M. report on 3rd child: E.F.
46	27	−	O	+	O	1:128 1:64	Before del. 7 days after del.	M. 1938 A.W.	F. 1940 I.G.N.: surv.	M. 1943 I.G.N.: surv. Gp. O Rh+			2nd child has had injections of mother's blood. 3rd child had blood transfusion
47		−	A	+	A	1:4	9 days after del.	S.B.	D. bronchitis	1943 Prog. an.: surv. Gp. A Rh+			3rd child had blood transfusion
48	26	−	A	+	A	1:32	During preg.	F. 1938 A.W. Gp. A Rh+	F. 1939 I.G.N.: D. 12 hrs.	F. 1940 I.G.N.: D. 3 days	M. 1941 A.W. Gp. O Rh−	(5) M. 1943 D. 9 mths. (anaemia) (6) 1943 Therap. misc.	
49		−	AB			1:1	9 mths. after del.	M. 1942 Prog. an.: D. few days	F. 1943 H.F.: D. ½ hr				Mother had toxaemia during last pregnancy
50	28	−	A	+	O	1:512	5 days after del.	M. 1938 A.W.	M. 1943 S.B.: H.F.				
51		−	O	+	A	1:4	9 mths. after del.	Misc.	1943 J.: surv. Gp. O Rh+				
52		−	A	+	A	1:64	8 days after del.	M. 1938 A.W.	1941 M., A.W. Gp. O Rh+ F., A.W. Gp. A Rh+	1943 J.: surv. Gp. A Rh+			Last child had blood transfusion. No anti-Rh agglutinins in cord blood
53	41	−	O	+	O	−	During and after preg.	M. 1922 A.W. Gp. O Rh−	M. 1924 S.B.: E.F.	M. 1928 S.B.: E.F.	1944 A.W. Gp. O Rh−		S.B.s are supposed to be due to E.F. Mother Rh'
54	39	−	A	+	O	1:1 −	14 days before del. 5 days after del.	1934 A.W. Gp. O Rh+	M. 1935 A.W. Gp. O Rh−	F. 1936 A.W. Gp. O Rh−	F. 1937 A.W. Gp. A Rh−	(5) 1940 S.B.: E.F (6) F. 1944 Anaemia: surv. Gp. O Rh+	6th child: no anti-Rh agglutinins in cord blood. Mother and 3 children Rh'
55	35	−	A	+	O	− 1:2	2 days after del. 1 mth. after del.	1935 A.W.	F. 1944 I.G.N.: surv. Gp. O Rh+				2nd child had blood transfusion
56		−	O	+	O	1:64	2 days after del.	A.W.	1943 I.G.N.: surv.				2nd child had blood transfusion
57	30	−	A	+	O	− 1:2	5 days after del. 12 days after del.	1934 Misc.	M. 1935 A.W. Gp. A Rh+	1937 J.: D. 8 days	1940 S.B.	(5) 1944 D. 24 hrs.	
58	29	−	O	+	O	1:64	10 days after del.	M. 1934 D. 11 mths. (sarcoma)	F. 1935 I.G.N.: D. 5 days	F. 1938 I.G.N.: D. 4 days	1944 Misc.	(5) 1944 5/12 preg.	Anti-Rh titre increasing during pregnancy
59		−	A	+	O	1:8 1:4	1 day after del. 7 days after del.	M. 1936 A.W.	M. 1939 D. 11½ hrs.	F. 1940 I.G.N.: D. 1 day	M. 1942 I.G.N.: D. 7 days	(5) F. 1944 Anaemia: surv. Gp. O Rh−*	*5th child is Rh'; had blood transfusion. No anti-Rh agglutinins in cord blood
60	40	−	A			1:2	?	Repeated misc.					
61	25	−	A	+	O	1:4	Few days after del.	1941 Haemolytic disease, D.	1942 A.W.	F. 1944 Prem. A.W. Gp. A Rh−			Mother suffering from severe anaemia. J. after trans. with blood of unknown Rh factor. Rh− blood given successfully
62		−	O	+	O	1:1 1:4	2 days after del. 11 days after del.	M. 1939 A.W. Gp. O Rh+	1942 S.B.	1944 S.B.: H.F.			

TABLE I (*continued*)

Family No.	Mother's Age When Tested	Mother's Group		Father's Group		Mother's Serum		Pregnancies					Notes
		Rh	ABO	Rh	ABO	Anti-Rh	Time When Tested	1	2	3	4	5, 6, 7, and 8	
63		–	O	+	A	1 : 1	?	F. 1942 A.W. Gp. O Rh +	1944 S.B.				Mother Rh'
64		–	A	+	A	1 : 2	1 day after del.	S.B.	S.B.	1944, S.B.			
65		–	O	+	O	1 : 32 1 : 256	6 days after del. 10 days after del.	A.W.	1944 I.G.N.: D. 6 days				
66		–	B	+	B	1 : 128	?	M. S.B.: prem.	F. 1944 E.F.: D. 15 days				
67		–	O	+	O	1 : 2	8 days after del.	F. 1937 D. 2 yrs.: pneumonia	F. 1939 S.B.: prem.	F. 1942 S.B.: prem.	1914 E.F.: D. 6 hrs.		
68	38	–	O	+	O	1 : 4	6 days after del.	M. 1932 A.W. Gp. O Rh – *	F. 1943 Prem. D.	M. 1944 I.G.N.: D. 2 days Gp. O Rh +			*1st child Rh'. 2nd born prem. after car accident: died from haemorrhage from umbilical cord. 3rd child died after convulsions in spite of transfusion with Rh – blood: enormous number of megaloblasts in blood film; serum from cord blood agglutinated baby's own cells
69		–	A	+	O	1 : 1	9 days after del.	1941 A.W.	M. 1944 I.G.N.: surv. Gp. O Rh +				2nd child had two blood transfusions
70	20	–	O	–	B	Not available		1943 J.: D.					Husband not tested for Rh' or Rh"
71	29	–	O			–	4 days after del.	1943 J.: surv. Gp. A Rh +					Mother's serum anti-A titre 1: 16,384
72	34	–	O	+	O	1 : 128	3 weeks after del.	F. 1936 A.W. Gp. O Rh +	F. 1938 S.B.	1944 S.B.			
73		–	A	+	A	1 : 128 1 : 512	3 days after del. 8 days after del.	A.W.	A.W.	A.W.	F. 1944 I.G.N.: surv Gp. A Rh +		4th child had blood transfusion
74		–	A	+	O	1 : 128 1 : 512	6 hours after del. 5 days after del.	F. 1942 A.W. Gp. A Rh +	M. 1944 I.G.N.: D. 3 mths. Gp. A Rh +				2nd child had two blood trans., showing signs of kernicterus. Died 3 mths. old, suffering from spastic paralysis and mental deficiency. Cause of death: pneumonia
75		–	A			1 : 4	During pregnancy	1931 A.W.	1934 S.B.: prem. (? E.F.)	1935 Misc.	1940 S.B.: prem.	(5) 1944 31/52 preg.	No further information available
76	24	–	O			1 : 128	3 days after del.	F. 1943 D. of pneumonia	M. 1944 I.G.N.: surv. Gp. O Rh +				2nd child had blood transfusion
77		–	A	+	O	1 : 512	8 days after del.	M., F. (twins) 1940 A.W. Both Gp. A Rh +	M. 1944 I.G.N.: surv. Gp. A Rh +				
78		–	O	+	A	1 : 256	7 days after del.	F. 1926 A.W. Gp. A Rh +	A.W.	A.W.	A.W.	(5) D. pneumonia (6) D. 2 weeks (7) 1944 S.B.: H.F.	6th child had enlarged liver
79	22	–	O	+	O	1 : 256	3 days after del.	F. 1943 A.W. Gp. O Rh +	1944 I.G.N.: D. 2 days Gp. O Rh – *				*2nd child Rh'. Baby's serum contained weak anti-Rh agglutinins
80		–	A	+	A	1 : 256	7 days after del.	M. 1942 A.W.	M. 1944 Prog. an.: surv. Gp. A Rh +				2nd child had blood transfusion
81		–	B	+	O	–	15 days after del.	1941 D. 2 days: congenital heart	1943 Prem. D. 3 days	1944 Prog. an.: surv.			
82	28	–	A	+	O	1 : 1	12 days after del.	F. 1935 A.W. Gp. A Rh +	F. 1938 A.W. Gp. O Rh –	F. 1940 S.B.: prem.	F. 1941 A.W. Gp. O Rh –	(5) F. 1943 S.B.: prem. (6) F. 1944 A.W. Gp. O Rh +	6th child reported to be very pale (!) for some time after birth. 2nd and 4th children Rh'
83	38	–	A	+	B	–	17 days after del.	1940 D. 20 days: pneumonia	1942 S.B.	1942 Misc.	1943 Misc.	(5) 1944 H.F.: D. few hrs.*	*Blood in very bad condition; could not be tested

TABLE I (*continued*)

Family No.	Mother's Age When Tested	Mother's Group		Father's Group		Mother's Serum		Pregnancies					Notes
		Rh	ABO	Rh	ABO	Anti-Rh	Time When Tested	1	2	3	4	5, 6, 7, and 8	
84		–	O	+	A	–	4 days after del.	1931 A.W.	1935 D.: cong. heart	1937 Misc.	1938 S.B.: prem.	(5) 1939 S.B.: prem. (6) 1944 S.B.: H.F.	Impossible to get more information
85		–	O	+	A	1: 512	9 days after del.	F. 1942 A.W. Gp. O Rh +	M. 1944 J.: surv. Gp. A Rh +				Mother's serum has also very high anti-A titre
86		–	B			–	6 mths. after del.	1938 A.W.	1940 S.B.	1944 S.B.: H.F.			
87	28	–	O	+	O	1: 4	9 days after del.	M. 1939 A.W.	F. 1942 Anaemia: surv.	1944 I.G.N.: surv. Gp. O Rh +			3rd child had blood transfusion
88		–	A	+	O	1: 512	14 days after del.	1942 S.B.	1944 I.G.N.: D. 5 hrs.				
89		–	B	+	B	1: 1	3 mths. after del.	S.B.	M. (twins) A.W. Gp. B Rh +	S.B.	S.B.	(5) 1944 S.B.	
90		–	O			1: 1	8 days after del.	A W.	A.W.	A.W.	M. 1944 I.G.N.: D. 1 mth. Gp. O Rh +		First 3 children by 1st husband. 4th child transfused with Rh – blood when 8 days old, suffering from I.G.N. with rigidity and head retraction (? kernicterus)
91		–	A			–	During preg.	1943 E.F.: D.	1944 5/12 preg.				Mother Rh'
92		–	A	+	A	–	5 days after del.	M. 1944 J.: surv. Gp. O Rh +					Child 10 weeks premature, very anaemic and jaundiced
93		–	O	+	O	1: 64 1: 256	5 days after del. 24 days after del.	M. 1932 A.W. Gp. O Rh +	M. 1944 I.G.N.: D. 2 days				
94		–	O	+	O	– 1: 1	1 day after del. 13 days after del.	A.W. Gp. O Rh +	M. 1944 I.G.N.: surv. Gp. O Rh +				2nd child had blood transfusion
95		–	O	+	A	1: 2	3 days after del.	1942 A.W.	1944 H.F.: D. 15 mins. Gp. O Rh +				1st child not by present husband. Mother Rh"
96		–	O	+	O	1: 1	4 days after del.	M. 1928 A.W.	M. 1931 I.G.N.: D. 2 days	M. 1933 S.B.	F. 1936 Prem. I.G.N.: D. 8 days	(5) F. 1941 I.G.N.: D. 2 days (6) 1944 S.B. Gp. O Rh +	6th child: no anti-Rh agglutinins in cord blood
97	37	–	A	+	A	–	9 days after del.	M. 1925 Prem. D. 3 wks.	M. 1933 Prem. A.W.	M. 1941 A.W.	1944 J.: surv. Gp. O Rh +		1st child died of convulsions: ? cause. Mother Rh'
98		–	A			–	During preg.	A.W.	I.G.N.: D. 4 days	1944 7/12 preg.			
99		–	A	+	A	1: 256	? first wk. after del.	M. 1928 A.W. Gp. O Rh +	F. 1930 A.W. Gp. A Rh +	1944 E.F.: surv. Gp. O Rh +			3rd child had blood transfusion
100	30	–	O			1: 2	12 days after del.	F. 1938 A.W. Gp. O Rh +	F. 1941 A.W. Gp. O Rh –	1944 Prog. an.: surv. Rh +			3rd child: specimen too small to group *and* test for Rh. Group unknown
101	36	–	O	+	O	–	During preg.	F. 1933 A.W.	F. 1941 I.G.N.: D. 4 days	1942 Misc.	1943 Misc.	(5) 1944 6/12 preg.	
102		–	A			1: 16	6 mths. after del.	Twins D.	S.B.	1944 Misc.			
103		–	A	+	A	1: 128	20 days after del.	M. 1944 Prog. an.: surv. Gp. A Rh +					Child had blood transfusion. Mother Rh'
104	35	–	A	+	O	–	12 days after del.	1942 A.W.	1944 J.: surv. Gp. A Rh +				
105		+	A	+	O	–	4 mths. after del.	1942 Severe an.: surv. Gp. A Rh +					Child had blood transfusion
106	20	+	O			–	8 days after del.	1940 ? I.G.N.: D. 12 days	1942 Misc.				
107	29	+	O			–	During preg.	M. 1935 A.W. Gp. O Rh +	1937 J.: D. 3 days	F. 1939 J.: surv. Gp. O Rh +	1943 4/12 preg.		

TABLE I (*continued*)

Family No.	Mother's Age When Tested	Mother's Group		Father's Group		Mother's Serum		Pregnancies					Notes
		Rh	ABO	Rh	ABO	Anti-Rh	Time When Tested	1	2	3	4	5, 6, 7, and 8	
108	39	+	A			–	During preg.	1931 A.W.	1932 A.W.	1941 J.: D. 14 days	1943 Pregnant		
109		+	O			–	1 day after del.	A.W.	J.: surv. Gp. A Rh +				Mother's anti-A titre after delivery, 1: 256
110	23	+	O				Not tested	? E.F.: D. few days	1943 32/52 preg.				
111		+	O	–	A	–	Few days after del.	1 and 2 prem. died soon after birth		D. 10 days	J. and an.: D. 7 days	(5) 1944 A.W. Gp. O Rh +	Mother's anti-A titre during pregnancy, 1: 8192
112		+	A	–	O	–	1st week after del.	1937 A.W.	1943 Prem. J. and an.: surv. Gp. O Rh +				
113		+	O	+	A	–	1st week after del.	1944 J.: surv.					Mother's anti-A titre 1: 1024 after delivery
114		+	A	+	B	–	11 days after del.	J.: D.	M. 1944 J. and haem.: D. Gp. AB Rh +				2nd child had blood transfusion. Mother's anti-B titre 1: 4095 after delivery
115	31	+	B	–	A	–	During preg.	F. 1943 ? E.F.: D. 4 days	1944 Pregnant				Mother's anti-A titre was 1: 16,384 + during pregnancy
116	29	+	O			–	4 days after del.	1944 J.: surv. Gp. A Rh –					Mother's anti-A titre 1: 2048 (4 days after delivery) Mother's anti-A titre 1: 256 (11 days after delivery)
117	42	+	A			–	2 mths. after del.	F. 1927 D. pneumonia	M. 1928 A.W.	M. 1931 A.W.	M. 1933 A.W. Gp. AB Rh +	(5) M. 1944 S.B.: ? H.F.	Mother's anti-B titre 1: 512 two months after delivery
118		–	O	+	O	1: 1 1: 1	12 hours after del. 9 days after del.	A.W.	M. 1944 I.G.N.: D. 18 hrs. Gp. O Rh +				2nd child died with convulsions during blood transfusion. Mother's serum incomplete antibodies 1: 1 in two tests
119	30	–	A	+	O	1: 128	During preg.	1940 Prem.: D. 2 days	1943 J.: D. 3 days	1944 Preg.			
120		–	O	+	AB	– 1: 1	1st week after del. 2nd week after del.	M. 1934 A.W. Gp. B Rh +	M. 1937 A.W. Gp. A Rh +	1944 J. and an.			Mother Rh", anti-B 1: 8192
121		–	O	+	A	1: 1	10 days after del.	1942 Misc.	1943 Prem. A.W.	1944 S.B.			
122		–	O	+	O	1: 32	During preg.	F. 1939 A.W.	M. 1940 I.G.N.: D. 4 days	F. 1942 J.: D. 19 days	1944 2/12 preg.		
123	26		O			1: 1	6 days after del.	F. 1938 A.W.	1940 Ectopic gestation	F. 1944 S.B.: E.F.			Mother: incomplete antibodies 1: 4
124	28	–	B	+	A	– –	During preg. 9 days after del.	M. 1942 S.B.	1944 E.F.: surv. Gp. A Rh +				Mother: no incomplete antibodies. Cord serum: no anti-Rh agglutinins
125		–	A			1: 512	6 weeks after del.	1935 I.G.N.: D. 1 week	1944 I.G.N.: D. 5 days				Mother Rh"
126		–	O	+	O	1: 1	During preg.	M. 1936 A.W.	M. 1943 J.: D. 18 days	1944 Misc.	1944 2/12 preg.		Mother: no incomplete antibodies
127		+	B	+	B	–	? some mths. after del.	1944 H.D.: D.					
128	30	–	O	+	A	– –	1 day after del. 10 days after del.	M. 1944 I.G.N.: surv. Gp. A Rh +					Mother: no incomplete antibodies in both tests. Child had blood transfusion
129	33	–	O			–	During preg.	M. 1942 I.G.N.: D. 22 days	1944 4/12 preg.				Mother: no incomplete antibodies
130	34	–	O			–	1 day after del.	M. 1940 ? J.: surv.	M. 1942 Misc.	F. 1944 I.G.N.: D. 21 days			Mother Rh", no incomplete antibodies. 3rd child had blood transfusion. Died of diarrhoea + vomiting
131	40	–	O	+	O	1: 16	10 days after del.	A.W.	A.W.	F. 1944 I.G.N.: surv. Gp. O Rh +			3rd child had blood transfusion
132	25	+	O				6 days after del.	1943 Misc.	1944 Prog. an.: surv. Gp. O Rh –				Child had blood transfusion

TABLE I (*concluded*)

Family No.	Mother's Age When Tested	Mother's Group		Father's Group		Mother's Serum		Pregnancies					Notes
		Rh	ABO	Rh	ABO	Anti-Rh	Time When Tested	1	2	3	4	5, 6, 7, and 8	
133	25	–	A			1 : 1	During preg.	1940 A.W.	1942 E.F.: D. 2 days	1944 5/12 preg.			Mother: incomplete antibodies 1 : 16
134		–	A	+	A	1 : 16	1 week after del.	A.W.	A.W.	A.W.	A.W.	(5) 1944 Haemolytic an.: surv.	5th child had blood transfusion
135	22	+	O	+	B	–	2 days after del.	F. 1944 E.F.: surv. Gp. B Rh –					Child had blood transfusion. Mother: anti-B 1 : 2048
136	31	–	AB			–	3 mths. after del.	A.W.	A.W.	1944 J.: D. 3 days			Mother: no incomplete antibodies

TABLE II.—*Transfusion Reactions*

Nature of Reaction	Rh + Patients who had:		Rh – Patients who had:		Remarks		
	Previous Transfusions	First Transfusion	Previous Transfusions	First Transfusion	Rh + Patients	Rh – Patients	
						Previous Transfusions	First Transfusion
Anuria	0	0	1	1		Mothers of babies suffering from H.D. Both anti-Rh present	
Jaundice . .	0	1	2	3	Anaemia	Anaemia cases. Anti-Rh present	All three women, one of them anaemia of pregnancy. All anti-Rh present
Rigor and high temperature	9	15	5	2	All patients very anaemic. One ulcerative colitis	2 patients: no anti-Rh present. 1 patient had several transfusions, all but the first followed by rigor: anti-Rh present. 1 patient had anaemia (Hodgkins): anti-Rh present	1 P.P.H.: anti-Rh present 1 (see above—jaundice) anti-Rh present
Haemoglobinuria and haematuria	1	0	1	1	Severe anaemia	Steatorrhoea: anti-Rh present	Same case as anaemia (above): anti-Rh present
Urticaria and shock	1	1	0	1	One case of anaemia and one of miscarriage		Eclampsia and anaemia: *no* anti-Rh present
No rise in haemoglobin	0	0	2	2		Same cases as jaundice (above): anti-Rh present	1 case see above (jaundice). 1 case (woman) of severe anaemia: *no* anti-Rh present
Pain in back or chest	1	2	0	1	All cases of anaemia		Anaemia (woman): *no* anti-Rh present
Vomiting . .	0	1	0	0	Ulcerative colitis		
Loss of consciousness	0	1	0	0	Disease unknown		
Undefined . .	0	3	2	4	2 cases of anaemia 1 unknown	1 case of septicaemia 1 case of operation: *no* anti-Rh present	All women: *no* anti-Rh present

Anti-Rh agglutinins were found in the serum of 94 ((79.6%) of the 120 Rh-negative women. In one of them (Table I, Case 61) the anti-Rh agglutinins may possibly have resulted from the transfusion of Rh-positive blood, as the woman's last baby was Rh-negative. After its birth she had received a transfusion of blood of unknown Rh group. Her first child died of haemolytic anaemia.

Anti-Rh agglutinins could not be found in 26 (21.7%) of the Rh-negative cases. In these the tests were carried out under varying circumstances: (*a*) after pregnancy with Rh-negative children (4); (*b*) only during pregnancy (4); (*c*) only during the first week after delivery (5); (*d*) during pregnancy and the first week after delivery (1); (*e*) only during the second week after delivery (2); (*f*) during the first and second weeks after delivery (1); (*g*) only during the third week after delivery (2); (*h*) 1 to 12 months after delivery (3); (*i*) over one year after delivery (2); (*j*) serum was not available (2).

Eight sera were tested for incomplete antibodies. Two had a higher titre of incomplete antibodies than of anti-Rh agglutinins; one had the same titre for both; five sera without anti-Rh agglutinins also had no incomplete antibodies. The cord serum of the affected babies was tested in 10 instances: no abnormal agglutinins were found in seven; anti-Rh agglutinins were present in two; one agglutinated the baby's own red cells.

The first pregnancy of the 120 Rh-negative mothers ended with a child normal at birth and during infancy in 80 instances. In 27 cases the child was suffering from haemolytic disease or was stillborn; in 5 the pregnancy ended in a miscarriage; and in 8 cases the child died from unknown causes or from causes other than with haemolytic disease of the newborn. Of the 80 normal first children 33 were Rh-positive, 5 Rh-negative, and 42 were not tested. There were eight Rh-negative normal children in families who had previously had children suffering from haemolytic disease of the newborn (Table I, Cases 9, 13, 20, 22, 23, 48, 53, 61).

The table includes 16 Rh-positive women. Eight of their husbands (5 Rh-positive, 3 Rh-negative) and eight of the affected children (5 Rh-positive, 3 Rh-negative) were tested. The serum of only one of the 16 Rh-positive mothers was put up against the baby's red cells; these were not agglutinated. The serum of one of these women could not be tested; in none of the other 15 were abnormal agglutinins detected.

III. Routine Serological Investigation of Unselected Women Attending an Ante-natal Clinic

Between Jan. 3 and June 5 and between Nov. 1 and Dec. 30, 1944, routine Rh tests were carried out on 433 women attending an ante-natal clinic. These women were unselected except that a large number had been sent to the ante-natal clinic at Univer-

sity College Hospital by outside doctors on account of a difficult obstetric history. This possibly explains the comparatively large number of 96 (22.2%) with histories of miscarriages and/or stillbirths.

339 women (78.3%) were Rh-positive, 79 (18.2%) Rh-negative, 11 (2.6%) Rh′, 2 (0.5%) Rh″, and 2 (0.5%) were Rh-negative tested with anti-Rh serum only. Out of 96 women who gave a history of miscarriages and/or stillbirths, 77 (80.2%) were Rh-positive and 19 (19.8%) were Rh-negative, Rh′, and Rh″ respectively. The Rh-negative, Rh′, and Rh″ women belonged to the following blood groups: Group O, 41 (43.6%); Group A, 44 (46.8%); Group B, 8 (8.5%); Group AB, 1 (1.1%). Of these women 60 had had no children and 34 were multigravidae.

The sera of the 94 women who were Rh-negative, Rh′, or Rh″ were tested for anti-Rh agglutinins. Of these women 53 (36 nulliparae, 17 multigravidae) were tested only during the first 6 months of pregnancy; 22 (13 nulliparae, 9 multigravidae) only between the 3rd and 9th months of pregnancy; 10 women who had had no previous pregnancies were tested some time during pregnancy, but further information was impossible to obtain. The 9 remaining women (1 nullipara, 8 multigravidae) were tested during and after pregnancy. Seven babies of this last group were tested; 6 were Rh-positive and 1 Rh-negative. One of the Rh-positive babies died of icterus gravis neonatorum; the other 6 were apparently normal. No information could be obtained about the remaining two. The mother of the baby who developed icterus gravis had been tested very early in pregnancy and no anti-Rh agglutinins were found then. Her serum contained anti-Rh agglutinins after delivery. Her husband and older child were both Rh-positive. Of the 94 who were Rh−, Rh′, or Rh″ this woman was the only one in whose serum anti-Rh agglutinins were detected. The sera of 20 of the Rh-negative women were tested for incomplete antibodies, but none could be found. No abnormal agglutinins were discovered in the serum of the seven babies tested.

Only 33 husbands of the 94 Rh-negative, Rh′, or Rh″ women were tested: 31 were Rh-positive; two were Rh-negative.

IV. Serological Investigation of Reactions following Transfusion

Reactions in 48 patients after transfusion of blood of compatible ABO group were reported to the depot director for further investigation: 28 reactions occurred in Rh-positive and 20 in Rh-negative patients. These reactions were not necessarily severe (see Table II). Of the 28 Rh-positive patients who had transfusion reactions six had received Rh-negative blood. No abnormal agglutinins were detected in their serum. A transfusion had been given previously to 10 of these Rh-positive patients. Of the 20 Rh-negative patients included in this series, two had had previous transfusions with known Rh-positive blood without any reactions. A second transfusion—in one case with Rh-positive blood and in the other with blood of unknown Rh factor—was followed by a reaction. Both patients had anti-Rh agglutinins in their serum.

Seven patients had previously been transfused with blood of unknown Rh group without reaction; 3 of them had a further transfusion with Rh-positive blood and with blood of unknown Rh group. The later transfusions were all followed by a reaction. Anti-Rh agglutinins were detected in the sera of two patients known to have had Rh-positive blood and in two who had had blood of unknown Rh group.

In 11 cases the first transfusion was followed by a reaction. One was a young child suffering from haemolytic anaemia and 10 were women, 5 of whom had only recently been delivered. Three of the maternity cases were those of women whose babies suffered from progressive anaemia or jaundice. One had anti-Rh agglutinins in her serum before transfusion, and these increased after the transfusion of Rh-positive blood (Case 23, Table I); the other two women were tested only after the transfusion with blood of unknown Rh group. One had anti-Rh agglutinins in her serum (Case 31, Table I); none could be detected in the serum of the third woman, who was not tested until 20 months after delivery (Case 44, Table I). The two remaining maternity cases were those of women who had been delivered of normal children; one received Rh″ blood, and no abnormal agglutinins could be detected in her serum; the second woman received blood of unknown Rh group after the delivery of a normal Rh-negative child. Her serum contained anti-Rh agglutinins. She had probably been previously sensitized during a pregnancy ending in the birth of a baby who died of haemolytic anaemia (Case 61, Table I).

The remaining 5 reactions occurring after the first transfusion were in patients not connected with maternity cases. One of these had Rh-positive blood and 4 had blood of unknown Rh group. Anti-Rh agglutinins could be detected in the serum of two of these women. No anti-Rh agglutinins were detected in the serum of the child suffering from haemolytic anaemia. Of these 20 Rh-negative patients 16 received one or more further transfusions with Rh-negative blood without any reaction. Five cases of this series are included in Table I (Nos. 1, 23, 31, 44, 61); anti-Rh agglutinins were found in the serum of each of these patients.

Discussion and Conclusions

The total number of Group O donors tested (5,837) was made up of two series: in the first, 84.0% were Rh-positive; in the second, 83.3% were Rh-positive. These figures are in close agreement with the other large series published in this country (Cappell, 1944).

The series of cases suggestive of haemolytic disease of the newborn has not been selected on as stringent a basis as some previously published series (Levine, 1941; Levine *et al.*, 1941; Potter *et al.*, 1943; Race *et al.*, 1943; Boorman *et al.*, 1944; Cappell, 1944), since it proved difficult to obtain by correspondence complete reports stating the clinical and pathological findings. The wide area served made personal contact impossible. Nevertheless, 88.2% of the total of 136 cases proved to be Rh-negative, and 79.6% of these had anti-Rh agglutinins in their serum.

The 433 ante-natal cases tested showed 78.3% to be Rh-positive—i.e., a lower proportion than occurred in the unselected donors and in other series published from ante-natal clinics (Cappell, 1944; Murray, 1944). There is at present no explanation of this low figure. The relatively high incidence, however, of Rh-negative mothers suggests the importance of routine Rh-testing in ante-natal clinics.

The number of transfusion reactions investigated was not large. The findings, nevertheless, suggest that the transfusion of Rh-negative individuals with Rh-positive blood is a not uncommon cause of relatively mild reactions and may result in more severe reactions. Of the 48 cases examined 20 (41.7%) proved to be Rh-negative, and 11 of these patients had anti-Rh agglutinins in their serum. Nine of the 20 Rh-negative patients had had previous transfusions without reactions, five with Rh-positive blood. It may be of interest that the remaining 11 patients who had a reaction after the first transfusion were all women. Diamond (1942) and Vogel *et al.* (1943) have published 10 cases each of reactions in Rh-negative patients following the transfusion of Rh-positive blood.

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Continuing its campaign for children's nurseries as a permanent feature of our national life, the London Women's Parliament (24, High Holborn, W.C.1) has issued a circular for distribution to mothers telling them how they can help to achieve this end. In an accompanying letter this organization welcomes the Government's recent decision to introduce a national nursery certificate for trained workers, but points out that some other assurance is needed that the nurseries are to remain—such as the continuance of the 100% grant to local authorities, the reopening of the "wartime" training schemes (closed last January), and the opening of the nurseries themselves to all who need them.

ACUTE INVERSION OF THE UTERUS

BY

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The object of this paper is to draw attention to a simple method of replacement of the acutely inverted uterus which my colleagues and I have not heard of to date—to wit, intravaginal hydraulic pressure attained in a very simple manner. This succeeded in the following two cases.

Case I

Mrs. A., aged 31; first pregnancy, 1938—normal labour and puerperium; infant 6 lb. 8 oz. The second pregnancy was normal; the expected date was given as early February. On Feb. 15, 1945, surgical induction by Drew Smythe catheter was performed. Spontaneous delivery of a living child weighing 6 lb. 12 oz. occurred 12 hours later. The first and second stages of labour together lasted three hours. There was moderate haemorrhage, so Credé's expression was practised, and immediately the uterus became completely inverted, the separated placenta being delivered at the same time. The uterus was replaced in the vagina at once, but further manipulation was considered inadvisable in view of the patient's shocked condition. I saw her 1 hour and 10 minutes after the inversion. She was pale and sweating; B.P. 80/50 and pulse 140. On palpating the abdomen no fundus uteri could be felt, and on parting the labia the red fundus uteri could be seen with the placental site on the fundus. Treatment for shock included three pints of blood. Three hours later the patient's general condition had greatly improved, so open ether was given and replacement by taxis was attempted. This manœuvre caused a rapid deterioration in her condition, so I decided to give a douche preparatory to a later attempt. In carrying out the douche the tip of the nozzle, guarded by my fingers, was passed towards the posterior fornix; my forearm happened to block the vaginal orifice and the vagina ballooned out, and to my surprise and pleasure the uterus promptly returned to its correct position, the signs of shock rapidly disappeared, and the patient made an uninterrupted recovery.

Case II

Mrs. B., aged 24; an especially interesting case, as she had had acute inversion with her second confinement. In 1941 the first pregnancy and labour were normal apart from mild toxaemia towards the end of pregnancy. In 1942, with her second, she had a normal ante-natal history. On Oct. 4, 1942, after a surgical induction on the same day, she had an easy spontaneous delivery of a female child weighing 7 lb. 3 oz. There was an adherent placenta, and after blood-grouping she was given a general anaesthetic, when the placenta was found to be adherent to an inverted uterus. The placenta was peeled off. The patient at the end of this operation was so shocked that no attempt could be made at replacement of the uterus. She was given a blood transfusion and gradually improved. The next day her haemoglobin was only 52%. She was given sulphonamides prophylactically. On Nov. 8 an Aveling's repositor was introduced and the uterus slowly and successfully replaced.

In her third pregnancy Mrs. B. attended at 36 weeks with the breech presenting; external version failed to correct the presentation. The pregnancy remained normal and the patient went into spontaneous labour on April 23, 1945, and had an easy breech delivery of a female child weighing 7 lb. 2 oz., alive and well. When the placenta was thought to have separated from the uterus an attempt was made to express it by fundal pressure and traction on the cord. Inversion of the uterus followed at once. As the patient was bleeding, an attempt to strip off the placenta was made, and this resulted in two large tears—one near the fundus, 2 in. long, through all three layers; the second on the left side, 1¼ in. long, also complete. At this stage the patient was desperately ill, with B.P. 70/40 and pulse 160. The placenta was finally stripped—bleeding being controlled by ergometrine and hot packs—the uterus dusted with sulphanilamide powder, and replaced in the vagina. Blood drip, 2 pints, was given, then reconstituted human serum, 2 pints. I saw this patient about 9 hours after the inversion, when she complained of backache and severe pain in her left shoulder. Her condition had improved sufficiently to warrant further treatment, though no major surgery could yet be attempted, her B.P. being 110/75 and pulse 120. Light open ether anaesthesia was given. The uterus was gently delivered through the vagina. The adjacent peritoneal cavity tubes and ovaries were inspected through the tears and found normal. The two large tears were sewn up in two layers—continuous catgut for the peritoneum and interrupted catgut for the muscle layer, which was found to be thin over the lateral tear.

The uterus was douched with proflavine and dettol, then dusted with sulphanilamide powder and again replaced in the vagina. Gentle taxis failed to replace the uterus and increased the pulse from 120 to 150; the B.P. also began to fall. At this stage, in spite of the ruptured uterus, which had been firmly sutured, it was decided to make an attempt to replace with hydraulic pressure as in the previous case. The vagina was distended to capacity by means of a dettol-and-proflavine douche, retained by blocking the vaginal outlet with my forearm, aided by my assistant's (Dr. England's) hands. The

FIG. 1.—Case II. Inverted uterus, showing complete rupture.

FIG. 2.—Case II. Cervix after replacement of inverted uterus by ballooning vagina, etc., by sterile douche.

uterus went back promptly and smoothly, the douche-can being held two to three feet above the vagina. The accompanying photographs, taken at the time, show (Fig. 1) the inverted uterus, with one of the complete tears; (Fig. 2) the cervix after replacement.

At the end of the operation there was no clinical evidence of any free fluid in the peritoneal cavity and the patient's condition was fair. Her puerperium was febrile for two weeks, but ultimately she made a complete recovery under first sulphanilamide then penicillin treatment.

Synopsis of the Complication

Acute inversion of the uterus means a rapid turning of the uterus inside out *per vias naturales*. This serious complication usually occurs during the third stage, though sometimes it may begin towards the end of the second stage by the pull on a short cord or soon after the separation of the placenta. Various authors put the incidence at between 1 in 200,000 and 1 in 17,000 deliveries. It usually occurs after a full-term labour, but has been reported in a five-months miscarriage.

The condition may be divided into (*a*) incomplete—including all degrees from a placental dimple to inversion into the vagina; (*b*) complete—where the fundus is outside the vagina. The common cause is mismanagement of the third stage of labour by: (1) pulling on the cord when the uterus is relaxed; (2) pushing on the fundus of a relaxed uterus; (3) a combination of these two. In the two cases just described one or both were caused by one of these three ways. The catastrophe is most likely to occur if the placenta is attached to the fundus. Careful records of this point would be of great help. Well-authenticated cases of spontaneous inversion have been reported.

The symptoms are usually very severe shock, out of all proportion to the amount of blood lost; a tendency to bearing down after the placenta has been delivered; and, later in the puerperium, a persistent red haemorrhage or oft-repeated small haemorrhages, with obvious signs of anaemia and difficulty in micturition.

The signs are as follows. A complete inversion is self-evident. An incomplete inversion may be mistaken for a large fibroid polyp, but if the bladder is empty an abdominal examination will reveal the absence of the fundus uteri in the abdomen, and in its place a saucer-shaped depression where the fundus has been invaginated into the uterine cavity. Examination reveals a large rounded polypoid mass with a broad pedicle in the vagina. This, with the abdominal findings, renders the diagnosis obvious.

The prognosis is always very grave, the mortality varying between 23 and 80% in different series. If left alone, sloughing and/or sepsis may occur. In some cases spontaneous reinversion in a matter of hours, in others even during the passage of years, has been reported.

Treatment.—(1) Immediate replacement as soon as the inversion occurs, and before shock develops, without attempting to strip the placenta if it is still attached. (2) If the patient is very shocked, first clean the uterus and change the complete inversion into an incomplete by gently replacing the inverted uterus in the vagina, then raise the foot of the bed, put a sterile pad on the vulva, and carry out treatment for shock. (3) When shock is controlled replace the uterus as described above by hydraulic pressure.

My grateful thanks are due to Dr. H. R. England and Dr. H. Mayer for their great help in the second case, and to Dr. L. B. Bourne for the excellent photographs.

Writing on vision and selection of personnel in industry in the July/August number of *Industrial Welfare and Personnel Management* Mr. Joseph Minton, F.R.C.S., expresses concern at the haphazard methods of vision testing in industry, many firms insisting on visual standards which are too high, others having no standards at all. As he says, men and women with all grades of vision can be employed in industry to-day, and he gives a chart for use as a general guide when selecting workers. In the same issue is an account by Col. S. D. Large of the planned exercises, mental and physical, at an Army convalescent depot which enables 85% of the men to leave fit. From his experience 70,000 cases Col. Large concludes that the principles practised at this depot could be applied with gain in civil centres. Dr. J. B. L. Tombleson describes a scheme operating in Bedford which provides a medical service to 10 firms employing about 7,000 workers.

ADMINISTRATION OF PENICILLIN BY INTRAMUSCULAR INFUSION

BY

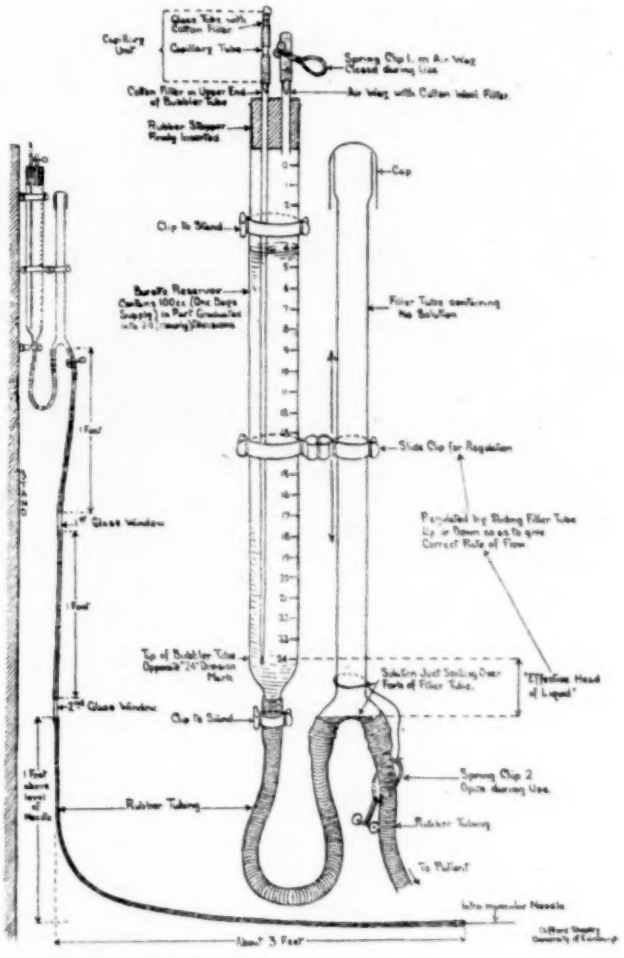
E. C. TURTON,* M.B., B.S.

(The Radcliffe Penicillin Unit of the Medical Research Council)

This account deals solely with the clinical aspects of the administration of penicillin by intramuscular infusion as described by Morgan, Christie, and Roxburgh (1944). Experience with 30 patients is summarized and attention is principally focused on three points: (i) whether this method was preferred by the patient to intermittent intramuscular injection.; (ii) whether it was convenient for the medical officer; (iii) whether there was any ill effect from its use.

Technique

The instrument used was the Eudrip 2 (see Fig.), briefly referred to by McAdam, Duguid, and Challinor (1944). It is


Cap
Clip to Stand
Burette Reservoir
Fitter Tube containing No Solution
Slide Clip for Regulation
Regulated by Sliding Filter Tube Up or Down so as to give Correct Rate of Flow
Top of Bubbler Tube Opposite "24" Division Mark
Solution Just Spilling Over Fork of Filter Tube.
"Effective Head of Liquid"
Clip to Stand
Spring Clip 2 Open during Use.
Rubber Tubing
Rubber Tubing
To Patient
Into muscular Needle
About 3 Feet

Eudrip apparatus No. 2 in use.

similar in principle to Eudrip 3, which they describe in detail, but instead of the 4-oz. "medical flat" bottle for reservoir there was a 100-c.cm. burette with 24 graduations. In the top of the burette there is a rubber bung with two holes for the glass tubes. To the tube which passes to the bottom of the burette is attached the capillary air intake, to the other a piece of rubber tubing and a clip for release during filling. This is done by filling the side arm and elevating it. The side arm and other connexions are similar to those of Eudrip 3.

Three types of needle were used: the ordinary needle in an M.R.C. pattern blood-transfusion set; one similar to this but with two side perforations; a needle of the Middlesex pattern.

* In receipt of a grant from the Medical Research Council.

Cetavlon was used for skin-cleansing. The needles were inserted without local analgesia.

The penicillin used for the first three or four cases was made by Pfizer, the remainder by Eli Lilly. A drip was not set up on a patient unless it seemed likely that it would be required for at least three days and unless he had had a course of injections previously. All the patients were in a 30-bed ward reserved for men from B.L.A. who had been specially selected as having severe compound fractures—of the leg in most cases. The majority of the drips were started within a week of wounding while the condition of the men was still acute. The usual site of the drip was the antero-lateral aspect of the thigh or the pectoral region, but on occasion both the calf and the trapezius muscle were used satisfactorily.

A drip was set up in 7 to 15 minutes by a medical officer, who checked its speed after an interval of approximately 1 to 3 hours. After that the nursing staff was responsible for its watching and refilling, the medical officer checking it only once or sometimes twice a day. The needles were changed either when there was an indication or every third or fourth day, although at first they were changed more frequently. The later tendency was to leave the needles *in situ* for longer periods —at the most 7 days.

The intermittent injections were administered by the nursing staff. No nurse was allowed to give the injections until she had been instructed by the medical officer and had been seen by him to do this satisfactorily. A subcutaneous needle of the size of a "Record" fitting No. 18 was used. Care was taken to see that the needles were sharp. 16,600 units of penicillin in 2 c.cm. of saline were given three-hourly—always slowly. For 24 hours one thigh was used for the injections, then a buttock for the next 24 hours, and similarly on the other side.

Patients' Preference

Out of 30 patients, 24 were quite emphatic that they preferred Eudrip 2 to injections. The commonest cause of drip preference was that sleep was undisturbed. Only two preferred the drip because of the actual pain experienced from the injections; but many had a considerable dislike of the needle-pricks, while two stated that their "nerves went to pieces" with the injections. Incidentally, these two were severely ill patients who required rest, and both took drips excellently.

In 4 cases in which both pectoral and thigh regions were used the thigh was strongly preferred, but patients disliked frequent changes of site, owing to the sensation on introduction of the needle. Drips were therefore started, where possible, while the patient was still under the influence of general anaesthesia following operation. Hence the indications from the patients' point of view for drip therapy were: (i) inability to sleep while having injections; (ii) fear of injections, which is easily transmissible round the ward; and (iii) pain from injections.

Six patients preferred injections, the chief reason being that these were quickly over and almost painless, while with a drip the needle was always present, which if not actually painful could be felt. That movement was hampered was also a source of complaint. Two had a strong dislike of the drip. Neither of these could give any obvious reason, and one, who was intelligent and bore severe pain without complaint, had such a horror of the drip that it had to be discontinued after a day.

Convenience of Use

The main difficulty in using the drip was the maintenance of a slow and steady supply of penicillin. The common cause of an irregular flow was a leak at the air capillary owing to the rubber splitting or a bung which did not fit perfectly. These resulted in too great a flow to the leg, with pain, to relieve which the delivery tube was sometimes clipped off, with subsequent blockage of the needle. The latter became a serious danger after half an hour's cessation of flow, although it occasionally happened sooner. Out of a total of 11 blocked needles, 8 had some antecedent technical difficulty with the drip. In four cases the blockage was probably avoidable and due to inexperience. A striking feature was that if there were no technical difficulties a drip would run to time almost exactly, with the minimum of interference. The number of drips going at a time varied, but it was found possible for one medical officer to have seven running simultaneously without interfering with his other duties.

A typical history of such a drip is as follows:

Day 1, 14.00 hrs.: Drip set up. Needle, left thigh. 100,000 units penicillin in 100 c.cm. saline
Day 2, 14.30 hrs.: Refilled. 100,000 units penicillin in 100 c.cm. saline
Day 3, 13.45 hrs.: Refilled. 100,000 units penicillin in 100 c.cm. saline
Day 4, 13.30 hrs.: Refilled. 100,000 units penicillin in 100 c.cm. saline
Day 5, 14.30 hrs.: Discontinued. End of course. No redness or swelling at needle site. Minimal tenderness on firm pressure on site

The following is an account of a not so satisfactory drip, such as was encountered occasionally.

Day 1, 22.00 hrs.: Drip set up. Middlesex needle, right thigh. 100,000 units penicillin in 100 c.cm. saline
Day 2, 09.00 hrs.: Drip too fast all night and had required frequent readjustment. Small leak round bung. Needle blocked. Stylet passed and needle reinserted near by
,, 16.30 hrs.: New set put up, as old one still leaked round bung
Day 3, 18.30 hrs.: Refilled; new set running regularly (100 c.cm.)
Day 4, 09.30 hrs.: Slight tenderness at drip site
,, 19.30 hrs.: Refilled (100 c.cm.)
Day 5, 20 30 hrs.: Discontinued. Very slight tenderness at drip site

Ill Effects

Fifteen patients admitted to some tenderness on firm palpation over the needle site after withdrawal, but pain was not a feature of the drips in any instance. In three cases very slight skin redness and in one case a moderate area of reddening were noticed. In eight cases there was a trace of localized oedema, which would probably not have been observed unless specially looked for. Subsequent stiffness of a limb with delayed return to full function was not found in any case, nor was there any abscess formation or pus in the needle track. The effectiveness of the treatment was demonstrated by measurement of blood penicillin levels, by the disappearance of Gram-positive pyogens from wounds, and the steady progress made by patients towards recovery—local and general.

The general impression at the end of the series was that, in a hospital where there are a practised operator and several nurses well acquainted with the technique of continuous intramuscular infusion, it is the method of choice for the patient and no more laborious for the staff than intermittent injection. In some cases in which injections are tolerated badly it is of great value. When it can be alternated with a course of injections it is especially acceptable to those who have to submit to a lengthy course of penicillin therapy. Some time, however, must elapse before a staff becomes proficient in using the apparatus, and, for this, instruction and practice are necessary.

Summary

Out of 30 patients 24 preferred Eudrip 2 to intermittent intramuscular injections.

Local reactions were slight or *nil*. No abscesses occurred.

With an experienced staff the time taken for supervising the accurate running of the apparatus is not considered greater than that required for repeated intramuscular injections.

The brands of penicillin used for both methods of administration were the same.

A further 10 drips have been set up in the same ward with less experienced staff, and they bear out the conclusions drawn in this paper—that it is a practicable form of treatment in a busy ward provided the staff has some instruction and practice.

I wish to thank Lady Florey and Prof. Christie for their great help in the preparation of this paper; and also Drs. McAdam, Duguid, and Challinor for permission to reproduce their illustration of Eudrip 2.

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It is announced from Leeds that Yorkshire has—apart from the Army Blood Transfusion Service itself—contributed more blood and blood products to the armed Forces than all the other regional services put together. Between January, 1941, and May of this year 25,028 bottles of whole blood and 128,523 bottles of dried serum or plasma were supplied. The number of donors presenting themselves is now falling off, and a warning was issued by the Public Relations Officer that general, maternity, and military hospitals have still to be supplied, and that consignments of plasma are being shipped to the Far East.

USE OF BENZEDRINE SULPHATE BY PSYCHOPATHS

THE PROBLEM OF ADDICTION

BY

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Benzedrine (amphetamine) sulphate was first introduced in America in 1935 by Prinzmetal and Bloomberg for the treatment of narcolepsy. Guttmann in 1936 reported its use in this country in cases of depression, and in collaboration with Sargant described its psychological effects in 1937. Since then an enormous literature has accumulated on its pharmacological and physiological action and its therapeutic application in narcolepsy, post-encephalitic Parkinsonism, alcoholism, epilepsy, obesity, etc. Its use in psychopathic states and behaviour disorders, both in adults and in children, has been described by Cutts and Jasper (1939), Bradley and Bowen (1941), and Korey (1944), and, on a larger scale in connexion with electro-encephalographic studies, by Denis Hill (personal communication). The beneficial effects of benzedrine in certain types of psychopathy have been observed in numerous instances by my colleagues at the Sutton Emergency Hospital. Hill, as quoted by Sargant and Slater (1944), has noted that certain psychopaths can tolerate benzedrine in enormous doses and benefit from the therapy, as opposed to normal persons, who are intolerant of high doses. The case here recorded illustrates this point.

Case Report

A man aged 35 was admitted to Sutton Emergency Hospital on Jan. 26, 1945, complaining of depression, insomnia, and bad nerves. There is a family history of psychopathy. The patient has been a nail-biter all his life, had periodical attacks of stammering, had nightmares, was enuretic up to the age of 12, and at school was a poor mixer. After normal schooling he trained for commercial art at Cardiff Technical College and had a succession of jobs in Wales and later in London. He had been married 17 years and had two children, but his wife left him in 1940 after they had had some "differences."

He is described as a persistently unhappy reserved man with few friends, stubborn, anxious, highly strung, sensitive, and easily depressed. Since 1939 he was a fire fighter in the N.F.S. and went through the London "blitzes," but had to "steel himself" to do so. He expected every bomb would be his last, but did not report sick. In March, 1944, during a raid, he received a slight injury to his arm and leg, and the "sudden realization that he had been hit at last produced shock." He fainted repeatedly, and remembers little after that until he found himself in hospital, where he remained some weeks. Sulphonamides with which he was treated made him depressed. After returning to duty he experienced some nasty flying-bomb incidents, and was tense and sleepless. His condition deteriorated, and he was sent to a Fire Force in North Wales for a month, but felt worse on return, yet continued on duty. His relatives were all evacuated and he had to look after himself. Finally he reported sick and was sent into Sutton Emergency Hospital. On admission he was tense and depressed, stammered, and stated that he had lost interest and had some thoughts of suicide, but was anxious to get well. He had bad dreams and felt that people were talking about him. There was a slight loss in weight. He insisted that he did not want to leave the N.F.S., because it gave him some measure of financial security.

Physical examination showed him to be a thin, asthenic individual. There were small scars on his right leg and the ulnar border of his right forearm. His pupils were dilated and B.P. was 120/95. There was no physical abnormality.

At the time of admission he gave no indication that he had been taking benzedrine. After five days of moderate sedation he was restless and agitated, and was put on continuous narcosis with sodium amytal and paraldehyde. The restlessness and agitation persisted for some days and he complained of vivid dreams of his experiences. His appetite was ravenous. When taken off narcosis he was treated with daily intravenous 33% glucose and with large doses of nicotinic acid, thiamine, and riboflavin. There was rapid physical and mental improvement, and he was no longer confused and agitated, was able to carry on a reasonable conversation, and slept well on small doses of paraldehyde.

He admitted he had been taking large doses of benzedrine early on during the narcosis, and later stated that he first began to do so during the 1940 raids. At that time he took it when he needed it, and was scared of its potency; but soon he took daily six tablets of 5 mg. each. He found no ill effects—it seemed to banish all tiredness and fatigue, and gave him a strong feeling of well-being—and by increasing the dose he experienced "unlimited energy." Soon he was taking nine to ten tablets, and in the latter part of the 1940 raids 30 tablets daily. This larger dose produced a tendency to some "subtle" depression a few hours afterwards: "nothing very suicidal, but at the same time a distinct sense of depression, irritability, and an increase of perspiration." The effect of well-being was increased by strong tea: "benzedrine with a strong cup of tea was better than a good meal." His average dose was nine tablets three times a day; this produced no sense of intoxication, but merely increased his energy and allowed him to do a better job. "It stimulated my sense of perception, imagination, and formulation of ideas." After many months he cut down his benzedrine consumption to eight tablets a day when the air raids ceased, but increased the dose whenever he was called upon to do extra work or go without sleep. His injury in 1944 suddenly deprived him of benzedrine for a month when in hospital, and, he states, "I can't say that I missed it a great deal, and although I could not sleep well I felt no craving for it"; but he resumed taking 25 to 30 tablets daily during the flying-bomb era. When on maximum doses he had to take 30 gr. of barbitone to help him sleep, but found that the uplift of benzedrine was carried over until the next morning. A fortnight after admission to Sutton Emergency Hospital he said he had no craving for benzedrine: "It rather interests me, as I expected to feel a craving for it when I came into hospital, but I did not." He rapidly improved, put on 8 lb. in weight, and lost his tenseness, but throughout maintained that although he did not want any benzedrine, he "felt it had been a good thing for me."

Discussion

The *Journal of the American Medical Association*, in an editorial in 1938, issued a warning on the dangers of the use of benzedrine for obesity, for which it was commonly being employed in America. That journal stated: "Its use over long periods is certainly not without danger, particularly to the circulatory system." Lesses and Myerson (1938) replied to this: "As to addiction, the drugs to which human beings become addicted are the narcotics. There is no evidence in the entire literature of medicine that stimulants become habit-forming. One of us (Myerson) has had clinical experience with benzedrine sulphate for more than two years in a very large number of cases and has not seen a single case of addiction in the sense that a person, otherwise well, now feels it necessary to take the drug habitually and in ascending doses to produce the desired effect." Waud (1938) stated that a definite tolerance for amphetamine is slowly built up, and that increasing doses are necessary to produce the original effects, but he indicated that the question of addiction was not settled at the time. Despite the many hundred papers published in connexion with benzedrine very few describe possible cases of addiction. Friedenberg (1940) quotes a case in which a patient in a period of six months took five 10-mg. tablets twice daily for obesity; reduction of the doses was followed by fatigue and depression and a demand for larger doses. Hahne (1940) described a case in which the patient had been taking benzedrine sulphate for nearly two years, averaging twelve 10-mg. tablets daily, and on many occasions double this amount. He was an alcohol addict before starting benzedrine, and, experimentally, was prescribed two benzedrine tablets daily. He returned many months later, and Hahne states: "He came looking fine. He had gained weight, and claimed that the taking of the drug had completely banished his craving for alcohol. He said, however, that if he missed taking the benzedrine he would get a terrific craving. He claimed that he could not carry out the daily routine without it. Withdrawal caused nervousness, exhaustive fatigue, an inability to think straight, and sleeplessness. In spite of the fact that he had been a lifelong drunkard he had not touched a drop since he began taking the tablets. Aged 49, his B.P. was 115/90." The last fact is interesting because one of the points raised against the regular use of benzedrine is said to be its hypertensive effect (Morse, 1936; Beyer, 1939). It will be noted that the blood-pressure of my patient was normal. Cases of so-called addiction have therefore only rarely been recorded. Guttmann and Sargant (1942) stated that they had not met with cases of addiction to benzedrine—the only queries were a few instances in patients with abnormal tolerance. They say: "The fact that patients cling to a drug from which they derive physiological benefit cannot be

regarded as liability to addiction. The same could be said of insulin or cough mixtures." In my patient there was little sign of "craving" when suddenly deprived of benzedrine in hospital in March, 1944. He says he did not miss it, and for five days in hospital before I put him on to continuous narcosis he took no benzedrine and showed no change in symptoms apart from some restlessness and sleeplessness. He was able to carry on in the N.F.S. for some years with large doses of benzedrine, and would almost certainly have broken down without it. Like a diabetic, he was efficient with his drug and inefficient without it. There were no serious physical changes as a result of its long use. Some cases of idiosyncrasy and collapse after the use of even small doses of benzedrine have been described in the literature, but they are rare. Bloomberg (1940), on the other hand, recorded his studies of three patients with narcolepsy who had been taking at least 70 mg. of amphetamine every day—for two years and eight months in two cases and for one year and eight months in another. In spite of the massive doses over a long period no significant abnormality was found in exhaustive regular tests: there was no rise in the basal metabolic rate, no rise in blood pressure, no evidence of organic damage to organs or blood, etc., and no evidence of addiction or habit-formation was found. We must conclude, therefore, that there is no evidence of physiological damage from benzedrine even in prolonged and massive dosage.

Summary

A case is reported of a patient taking large doses of benzedrine (amphetamine) sulphate for over four years, the daily consumption being from twenty-five to thirty 5-mg. tablets for many months periodically.

The only apparent withdrawal symptoms were increased restlessness and sleeplessness. There were no apparent physical ill effects. The blood count was normal. After stopping the benzedrine the patient had a marked hunger, which confirms the fact that benzedrine reduces the appetite.

Although the use of benzedrine was abruptly stopped when the patient entered hospital, he made no request for it.

Sleeplessness induced by benzedrine was well compensated by barbitone.

This paper discusses the question of "benzedrine addiction" and notes the clinical experience that certain types of psychopath can well tolerate and benefit by large doses of benzedrine.

I wish to thank Dr. L. Minski, medical superintendent of Sutton Emergency Hospital, for permission to publish this case, and to Drs. Slater, Sargant, and Hill for their help and advice.

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A circular from the Ministry of Health states that a substantial extension of mass radiography will not be practicable until normal production of the highly specialized apparatus required becomes possible and reduced demands on medical man-power release the skilled staff essential to the proper use of the apparatus. In view, however, of the general desire for an extension of mass radiography as soon as conditions permit, the Minister reminds tuberculosis authorities (other than the few who already have mass radiography units in operation) that the M.R.C. Committee on Tuberculosis in Wartime in its report issued in September, 1942, advised that a high standard of quality of miniature radiography is necessary for correct interpretation and that the use of compromise apparatus is to be condemned. Experience has since confirmed the soundness of this advice. The Minister suggests, therefore, that, when the present difficulties begin to relax, authorities wishing to undertake mass radiography should first seek the advice of his expert consultants, who will give every help and guidance.

ERYTHEMA NODOSUM AND TUBERCULOSIS

BY

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Recent articles in the medical press have stressed the common association between erythema nodosum and tuberculosis. The rheumatic theory of its origin, however, is still too prevalent among general practitioners, and often blinds them to the necessity for referring these cases to the tuberculosis officer for investigation. Perry (1944) states that in 72% of cases among school-children erythema nodosum marks the onset of primary tuberculosis. Daniels (1944) records 5 cases out of 284 tuberculin-negative nurses who became tuberculin-positive after an attack of erythema nodosum. The Norwegian authority Ustvedt claims that the condition is practically always a tuberculous one. The following cases have been seen at a tuberculosis dispensary in the past 18 months.

Case 1.—Boy, 13 years; referred to dispensary with erythema nodosum in June, 1943. Fading nodules on both shins, but nothing heard in chest. Failed to return to dispensary for two months. Cough then present, with pain in the chest. Temperature 99.6° F. Pleural effusion found at left base. No heart murmur. Patient admitted to sanatorium, and Mantoux test found positive to 1 in 10,000 dilution. Effusion cleared normally, and chest film a year later showed calcified hilar glands. Attack of acute nephritis while in sanatorium. Now well, and working. Family history: mother's uncle had tuberculosis and brother has tuberculous cervical glands.

Case 2.—Boy, 12 years. Developed erythema nodosum in Aug., 1944, and was treated in bed by the family doctor. When allowed up, started a cold and complained of periodic attacks of pain in the right side of chest. On Oct. 12 examination revealed right pleural effusion. Tuberculin patch test gave a slightly positive human reaction and a strongly positive bovine one. Treated in bed for a further eight weeks. A chest film on Dec. 9 showed absorption of fluid and a large right root shadow, suggesting a primary complex. He now feels well and is gaining weight. Family history: nothing of tuberculosis. Mother had a cough, but chest film was negative.

Case 3.—Youth, 16 years. Developed some pain in the right side in June, 1944, followed by erythema nodosum on the left leg. Referred to dispensary; a chest film showed opacity in and above the right horizontal fissure. Developed a slight cough, and admitted to sanatorium on Jan. 2, 1945. Film then showed a large root shadow with some infiltration in the right lower zone. There were two calcified shadows in the left root. No family history of tuberculosis.

Case 4.—Girl, 10 years. Referred with a history of erythema nodosum two months before, in June, 1943, and as a contact of her elder sister with active pulmonary tuberculosis and a positive sputum. A chest film showed some shadowing in the right midzone. Has been kept under observation for the past 18 months; complained of pleurisy pain in June, 1944. A chest film in August suggests that bronchiectasis may be developing at the right base. Her weight and appetite are good.

Case 5.—Girl, 16 years; referred with pain in the left shoulder-blade, cough, and sputum. Was just recovering from an attack of erythema nodosum. A chest film showed a fan-shaped shadow contiguous with the left root shadow. A few crepitations were heard in the left subclavicular region. Sputum was negative for T.B. Admitted to a sanatorium for treatment. Her father has a chronic cough, but refuses to be examined.

Case 6.—Girl, 6 years; referred with erythema nodosum and history of frequent colds and "styes" on eyelids. Bluish nodules on both shins. Tuberculin patch test gave a slightly positive human reaction and a strongly positive bovine one. Left tonsillar gland slightly enlarged. A chest film showed large left root shadow, suggesting a primary complex. Two or three weeks later she developed phlyctenular conjunctivitis and corneal ulcers, followed by a recurrence of erythema nodosum. As her general condition was poor, sanatorium treatment was advised. Family history: aunt attends dispensary with old mainly calcified disease and a negative sputum. Mother's chest film negative. Father has had chest trouble for years, but refuses examination.

Case 7.—Boy, 9 years; referred on account of a cervical abscess. Swollen glands first appeared after an attack of erythema nodosum in Jan., 1944, which had been described as surface rheumatism by the family doctor. The glands subsided after rest in bed, but recurred in October with abscess formation. The abscess was opened by the doctor and discharged intermittently. He was admitted to a sanatorium for treatment, and the Mantoux test was found positive in 1 in 25,000 dilution. A chest film was normal. There was no

definite family history; but the child frequently visited a house where somebody had a bad cough and swollen glands in the neck.

Case 8.—Boy, 6 years; referred because a lodger in the house had been found suffering from pulmonary tuberculosis with a positive sputum. The left tonsillar gland was enlarged, and a tuberculin patch test was found positive for human and bovine tests. A chest film showed a primary complex on the left side. He had had an attack of erythema nodosum in Jan., 1944, diagnosed as rheumatism.

Case 9.—Boy, 7 years; referred with erythema nodosum, corneal ulcers, and phlyctenular conjunctivitis. Tuberculin patch test positive for both human and bovine tests. A chest film showed an enlarged right hilar gland, suggesting a primary complex. Rhonchi were heard in the right lung, and there has been loss of weight. He visits a house where one of the family died of tuberculosis.

Summary and Conclusions

Nine cases of erythema nodosum are described. Seven were of school age; two were young adults. Six are males, three are females. Three are contacts of known cases of pulmonary tuberculosis, and another has a family history of tuberculosis. Two have been visitors to a tuberculous household, and two more have relatives suffering from chronic cough who refuse to be examined. Only two gave no history of suspicious contact. All the children gave a positive tuberculin reaction. The tuberculous lesions met with were pleural effusion, pulmonary tuberculosis, phlyctenular conjunctivitis with corneal ulcers, tuberculous cervical glands, enlarged or calcified hilar glands, and a simple primary complex. No history of rheumatism was given by any of the patients.

Erythema nodosum is often associated with tuberculous lesions, and is a manifestation of tuberculous infection. All cases should be referred to the tuberculosis officer for investigation and follow-up. Every case of erythema nodosum should be regarded as a newly infected case of tuberculosis, and therefore search should be made among family and friends for the unknown source of infection. While the cases may develop nothing serious, the occurrence of ill-health and minor tuberculous lesions is frequent enough to warrant attendance at a tuberculosis dispensary in every case.

My thanks are due to Dr. D. F. Macrae, chief clinical tuberculosis officer to Durham County Council, for permission to publish these records, and to Dr. J. W. Gray, medical superintendent, Holywood Hall Sanatorium, for allowing me to see Case 3, a patient in the sanatorium.

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Medical Memoranda

A Freakish Occurrence

A patient suffering from pulmonary tuberculosis with an apical cavity was found to need the division of certain adhesions which were preventing the establishment of a satisfactory pneumothorax. Through the thoracoscope (a single-instrument pattern) multiple adhesions suitable for division were displayed. They were cut with the electrocautery in the usual way until one only remained. This was a rather fleshy posterior adhesion which it was judged would require novocain infiltration of its parietal attachment over a rib. For the uninitiated it may be explained that such injections are made through a long metal tube to the end of which a small needle, about $\frac{1}{4}$ in. long, of the Schimmelbusch type is screwed, the whole being introduced to the site of injection through the thoracoscope. While this injection was being made a sudden movement of the instrument caused the little needle to snap off. It was subsequently found that the needles of this batch were unduly brittle owing to a slight defect in the tempering. A search of all parts of the pleural cavity visible in the field of the telescope was made, but the small portion of needle, about $\frac{1}{4}$ in. long and the thickness of a hypodermic needle, could not be seen. It was believed that it had fallen into the posterior sulcus and, as the patient was in a semi-upright position, probably lay just above the diaphragm. It seemed unlikely that a small portion of sterile needle in this position would cause any trouble and, in any case, radiographic location was essential before further steps, if any, were taken. The patient was therefore returned to the ward.

The instrument was now taken to pieces, cleaned, and re-sterilized by boiling. The next case also had multiple adhesions, which were divided. Before withdrawing the instrument a final look round revealed a thin straight reddish object lying on the upper surface of the lower pulmonary lobe. It was about the size and shape of the missing part of needle, but as this line of thought seemed too fantastic to be seriously pursued the suggestion was made that the object was possibly a blood-cast expelled from an artificial pneumothorax needle used at one of the previous refills. Satisfied with this explanation I withdrew the instrument.

The *x*-ray photographs taken on the following day, however, showed beyond doubt that the small piece of needle broken off in Case 1 was now in the chest of Case 2, and that it was the blood-stained portion of needle which had been viewed through the thoracoscope. How the transference occurred is not known with certainty, but it was found just possible to insert a portion of a small needle between the telescope and the outer sheath where a slight groove is produced by the electrical lead to the lamp.

The needle after breaking off must have passed directly backwards into the instrument and there become attached by a little blood clot, the fixation being aided probably by the heating effect of a cautery both upon the blood and the film of lubricant (K-Y jelly) employed. In this position it withstood the ordinary method of cleaning followed by boiling for several minutes, but was pushed out by the insertion of the telescope when the sheath of the thoracoscope was already in the thorax of the second case.

The chances of such a series of events occurring must be very small; my non-mathematical friends all speak in terms of millions.

NORMAN C. LAKE, M.S., F.R.C.S.

Congenital Discoid Internal Cartilage

Congenital abnormalities of the external cartilage in the form of either a complete or a partial disk are relatively common, and are most often encountered in adolescence, when they first cause trouble. We have been unable to find any reference to a similar condition affecting the internal cartilage, and so great an authority as Prof. McMurray remarks that he has never encountered a complete disk on the inner side. A fairly careful perusal of the literature makes us feel that the following case merits recording.

Photograph of the specimen. The black glass rod is in the tear on the superior surface of the cartilage.

This patient, a soldier aged 29, passed A1 for the Army 4½ years ago, and was admitted to Alder Hey Emergency Hospital on Oct. 20, 1944. His knee-joint had never troubled him until five weeks before admission. He was walking out of the Naafi when his left knee gave way with a loud crack, causing him to stumble. This happened several times on the way back to his billet, and finally the knee-joint became fixed in a semi-flexed position. His M.O. applied a back splint, which was kept in place for four weeks, and after its removal he was allowed up, but still found walking very painful and difficult.

On admission to Alder Hey there was a definite effusion in the knee-joint, and extension was limited by a few degrees. A bucket-handle tear of the internal cartilage was diagnosed. At the operation it was found that the upper articular surface of the tibia was completely covered by a somewhat irregular fibro-cartilaginous disk. With some difficulty this disk was completely removed. Post-operative examination of the specimen revealed that it was a complete disk with a split extending from the back end to the front of the cartilage, and in addition on its deep surface a horizontal split was discovered.

Progress was uneventful, and on discharge 10 weeks later he had a full painless range of movement with no effusion, and had reached the "heavy" class in physical training.

This case is published with the kind permission of the medical superintendent, Dr. W. E. Crosbie.

Orthopaedic Centre, Alder Hey Hospital, Liverpool.

F. C. DWYER, M.Ch. Orth., F.R.C.S.
C. TAYLOR, M.B., Ch.B.

Reviews

A NEW TEXT OF GALEN

Galen on Medical Experience. First edition of the Arabic Version with English Translation and Notes. By R. Walzer. Published for the Trustees of the late Sir Henry Wellcome. (Pp. 164. 12s. 6d.) London: Oxford University Press.

The discovery of a new text of Galen is something of a literary event, and the source in this case particularly interesting, if not wholly unexpected. The works of Galen were well known to the Nestorian writers of the ninth century, who translated them into Syriac. In the next century they were turned from Syriac into Arabic. In Greek they were largely neglected. Thus certain of them were lost in the language in which they were written, but of these some have survived in Arabic versions. The best known of these Arabic survivals is the great treatise on dissection, *De anatomicis administrandis*, the last part of which is known only in that language. When this was published some forty years ago hopes rose high of further discoveries of like kind. The present work is thus a fulfilment of those hopes. The manuscript on which it is based was discovered in the library at St. Sophia in Constantinople in 1931, and the work is now available to English readers.

Galen was a complex character. He was at once an able experimenter, a courtly physician, and a contentious disputator. This work shows him in the last role. It was written in A.D. 150 before he was 21, and was intended to reproduce a disputation held in Smyrna between Galen's master, the dogmatist Pelops, and the empiricist Philippos. We know very little of the empiricist school, and this work extends our knowledge considerably. It is peculiarly valuable for this purpose, since Galen expressly refrains from putting his own views into the mouth of the empiricist. There are very few texts of Galen available in English. This new one, clearly set forth and admirably printed, provides a side of Galen that has not hitherto been presented in our language. We are grateful to Dr. Walzer for this literary service.

THE ADVANCE OF MEDICINE

The March of Medicine. The New York Academy of Medicine Lectures to the Laity, 1944. (Pp. 121. 11s. 6d.). New York: Columbia University Press; London: Oxford University Press. 1945.

The New York Academy of Medicine continues its laudable custom of annually inviting the lay public to its comfortable and acoustically perfect theatre to hear lectures on the advance of medicine. It is noteworthy that for the first time the format of the book containing these accords with the war economy standards of this country instead of its previous more elaborate style. Particularly striking is Prof. C. M. Macleod's lecture on chemotherapy, the best non-technical account of the subject we have read. He reminds us that even in 1881 von Behring believed that the killing of bacteria within the body was for ever impossible without also killing the host. He also has the gift of metaphor; discussing the role of para-aminobenzoic acid in bacteriostasis, he compares the sulphonamides to the flies used by fishermen, which the trout mistakes for something (i.e., para-aminobenzoic acid in this case) he has been accustomed to devour with relish, and so is hooked. Moreover, some drug-fast bacteria seem to have acquired the property of excluding the sulphonamides from the cell—like the wise old trout who detects the baited hook. But the whole lecture repays careful reading. Dr. Glen King gives a lucid and straightforward account of food in relation to civilization, and adds a useful warning. Remembering how wholly ignorant we were thirty years ago concerning vitamins, it is absurd to conclude that our knowledge of such things is now complete, and in view of past mistakes "every new development in the art of processing, storing, or preparing food must be scrutinized in the light of the accumulated knowledge of nutrition." It was a gracious thought to invite our Minister at Washington, Sir Gerald Campbell, to lecture on the effects of science on human beings. He considers that "the two main departments in which we have of late allowed ourselves to benefit from the gifts of science are personal comfort and war," with disastrous results. "The scientist cannot wholly isolate himself from the rest of human affairs and remain indifferent to the wider implications of his discoveries . . . if civilization is to advance into that spacious era which science is laying open to us." Lieut.-Col. T. T. Mackie gives a vivid historical account of the influence of epidemics on the outcome of wars and indeed on the fate of nations. The Crimean War, with its gross medical defects, nevertheless led to a new era in medicine itself. It is evident that the medical problems of armies and navies at war, and the need for maintaining their establishments in peace, have indirectly contributed to the progress of medicine and to the control of epidemic disease. "The great general of the future must have a great physician on his staff."

DIGESTIBILITY OF DIFFERENT FOODSTUFFS

Les Régimes des Hépatiques. By Étienne Chabrol. (Pp. 61. No price given.) Paris: Librairie J.-B. Baillière et Fils. 1941.

Les Régimes des Gastropathes. By Paul Carnot. (Pp. 128. No price given.) Paris: Librairie J.-B. Baillière et Fils. 1943.

Arctic explorers and shipwrecked mariners dream continually of food, and similar circumstances probably explain the appearance of these two monographs printed in France during the occupation. They are typically French in their accounts of the digestibility and characteristics of different foodstuffs. The same might not unfairly be said of their reliance on tradition and theoretical deduction rather than controlled experiment and observation. It is difficult, for example, to get a clear picture of what is meant by "the liver in hyperactivity (hypertrophic cirrhosis and sundry nutritive and dyspeptic conditions)." Biochemical observations on patients with large livers indicate that the functional activity of the liver is reduced. In fact, much of these books will appeal more to the layman than to the physician, as, for example, the suggestion that dyspepsia is commonly produced by excess of protein, carbohydrate, or fat in the diet and is to be corrected by a careful balance of these ingredients. These prescriptions will be more useful for the treatment of wealthy hypochondriacs than for the handling of patients in ordinary general or hospital practice. Ascites and oedema are treated by giving 1,500 c.cm. of milk every day for three or four weeks. Vitamins C and P and 50 grammes of liver a day are added, but no other food or drink. There seems no rational basis for reducing protein and calories in this way when the patient is already in a state of hypoproteinaemia, and we should need successful records of controlled trials before recommending such a regime.

PSYCHOLOGY IN GENERAL PRACTICE

Psychology in General Practice. Edited by Alan Moncrieff, M.D., F.R.C.P. The Practitioner Handbooks. (Pp. 199. 12s. 6d.) Published on behalf of the *Practitioner* by Eyre and Spottiswoode. 1945.

This collection of essays will be extremely useful to the family doctor, and the non-psychiatric specialist will find that a study of them will help him to understand the "overtones" of his specialty, which are constantly present when he deals with the human being who is his patient. On the whole the various authors give the reader essentials which he ought to know, without burdening him with technicalities or the elaborate devices of special treatment.

The first four chapters deal with generalities of approach, classification, diagnosis, and treatment; the next four with the more specific mental illnesses; then comes a most valuable chapter by Dr. Rogerson on visceral neuroses, which should be carefully studied by all doctors. Dr. Halliday's chapter on psychosomatic medicine and the rheumatism problem is stimulating, but leaves the impression that this is a subject which needs much more exact and carefully controlled study by the conjoined work of the rheumatologist and psychiatrist. With one statement, however, we can cordially agree—that "fibrositis" is a label far too loosely and frequently applied. Dr. Maberly's and Dr. MacCalman's chapters on problems in childhood deserve careful study, for it is here that the chance of preventing mental illness and maladjustment lies, not only for children themselves but for the parents as well. Dr. MacCalman's chapter on minor degrees of mental defect is very valuable.

The work of Service psychiatrists among their personnel has shown how important is backwardness in preventing proper adjustment and how useful the backward can be if their tasks are fitted to their capacity, and the same lessons have to be

learnt in relation to civil life. Dr. Curran warns his readers against a too ready acceptance of the cliché that all crime is disease, and points out the use and the limitations of psychotherapy in the treatment of delinquency. Mrs. Edkins's chapter on psychiatric social work shows how useful an auxiliary the well-trained psychiatric social worker can be. Dr. Griffith pleads for greater knowledge of sex problems by the family doctor, who ought to be the adviser of his patients on these matters, but who often fails lamentably. This is too big a subject to be dealt with in a small space, but indications are given of where fuller information may be obtained. Finally Dr. Tattersall gives a detailed summary of how to get a patient into and out of a mental hospital, which should be of great service to the practitioner.

This little book deserves a wide public, and whoever acquires it will not find that much professional time passes before he has found a use for it.

Notes on Books

An interesting book, *Annals of the University of Otago Medical School, 1875–1939*, by Professor D. W. CARMALT JONES, has reached us from A. H. and A. W. Reed, 182, Wakefield Street, Wellington, New Zealand. The inception of this school in the South Island was in 1870, when the New Zealand University Act, by which degrees in medicine could be granted, became law. Tedious birth pains set in, and it was only in 1875 that the Faculty of Medicine was opened. The first doctor to practise in Otago Province was Dr. Joseph Crocone, who arrived in 1836. Gradually other wandering doctors arrived, but it was not till 1861 that Alfred Eccles, F.R.C.S., of St. Bartholomew's Hospital, went out from Britain and made himself the moving spirit in a series of undertakings which contained the germ of the Otago Medical School. At that time there was a big increase in immigration, following the discovery of gold in Otago, which attracted 200,000 diggers to Dunedin. The book opens with an account of the nature and history of the New Zealand country, its zoological and botanical peculiarities. Succeeding chapters are devoted to the establishment, development, and present status of the Medical School. The settlement was made on a considered plan, which placed Otago far ahead of all other New Zealand cities in the matter of higher education. Great pains were taken in the choice of professors, and men of "quite exceptional quality" were secured. Otago was the first British University to grant degrees to women. Biographical notices are given of the medical leaders associated with the fortunes of the College. Prof. Carmalt-Jones in compiling his history has given us a model for the establishment of Colonial colleges on a sound basis. He takes his readers through all the stages of development of a fully constituted university.

Mechanical Dentistry, by EDWARD SAMSON (The Technical Press, Ltd., Gloucester Road, Kingston Hill, Surrey; 15s.) is an excellent textbook for dental mechanics, and describes in detail the basic principles of their craft. So much advance, however, has been made recently in the use of plastics in dentistry that a new chapter must be added to bring the volume up to date.

Preparations and Appliances

A SIMPLE APPARATUS FOR CONTINUOUS PENTOTHAL

Dr. H. MARCUS BIRD, D.A., honorary anaesthetist, West Suffolk General Hospital, writes:

During the past few years a large number of devices for administering continuous pentothal have been described. The great majority of them share the faults of being cumbersome and difficult to sterilize except in a fully equipped theatre.

The ingenious bicycle-valve apparatus described by Cochrane in the *Journal* of Aug. 26, 1944, has neither of these disadvantages, but, in its original form, detaches the anaesthetist from the patient's head. This can be overcome by increasing the length of the rubber tube to about 2 feet, when the syringe can be clamped to the head of the table and controlled with one hand, leaving the other hand free for the patient or the anaesthetic trolley, as can be seen in the photograph. This set-up is not ideal, for the longer tube not only spoils the excellent vein-seeking properties of the apparatus, but in addition any accidental compression of the tube or constriction of the arm causes back-flow of blood into the needle with blockage from clot. This can be prevented by using two bicycle valves, one close to the needle and the other attached to the syringe, but this arrangement offers so much resistance to injection of the solution that it is difficult to give the very small amounts required during the more prolonged administrations.

The most satisfactory combination is a glass needle mount attached to a female syringe fitting by a 2-foot length of rubber tubing with an ordinary bicycle valve interposed 2 inches from the glass viewer. This gives a considerable amount of backlash in the syringe, but by compressing the plunger sharply by 1/2 c.cm. and releasing it immediately about 1/10 c.cm. of solution will pass the valve and needle, quite sufficient to keep the needle clear.

The internal bore of the rubber tubing is very critical. It must fit the valve snugly enough to prevent backflow, but not so tightly as to necessitate the use of any force in the syringe, or the adapter may be blown off it. (A bayonet catch here might be an advantage.) If different strengths of solution are used, it is wise to use them always in different patterns of syringe to avoid any possible confusion—for example, an all-glass syringe containing 5% solution for induction and a Record containing 2½% for maintenance. The syringe can be clamped to any convenient object in a carrier constructed from two spring tool-clips screwed to a strip of wood. A third, very small, clip holds the mount while the syringe is changed or refilled.

In use it is advisable to inject a few drops of solution at least once every ten minutes (though the needle will often remain clear for very much longer than this), and for this reason the 2½% solution is preferable for maintenance, especially as surprisingly small amounts of pentothal are required when supplementary nitrous-oxide–oxygen or cyclopropane is employed.

The capacity of the apparatus is about 4 c.cm., and this must be allowed for if changing from one strength of solution to another, as the first 4 c.cm. injected will be of the strength formerly in use.

Sterilization is simplicity itself, as the whole apparatus can be either boiled or carried in a spirit-proof container ready for immediate use. This, together with its portability and ease of construction from local sources, should commend its use under active service conditions.

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CHANGES IN THE KNEE-JOINT AT VARIOUS AGES

Osteo-arthritis is a disease which is found in all vertebrates and is known to have occurred in man since the earliest times. The Neanderthal man of La Chapelle (40,000 B.C.) had hypertrophic spondylitis of the fifth to seventh cervical and first to third thoracic vertebrae,[1] and Timbrell Fisher[2] has found that prehistoric animals in the British Museum show evidence of advanced degenerative joint disease. The aetiology of osteo-arthritis has, however, always remained a matter for dispute. Many modern writers think chronic vascular disease resulting in local anaemia is the important causative factor, while others suggest that dysfunction of one or more of the endocrine glands is responsible. While a few authors incriminate a specific metabolic disorder, a larger group regard extra-articular infections with streptococci or other organisms as a major aetiological factor; some of these look upon degenerative joint disease and rheumatoid arthritis as variant manifestations of the same arthropathy; yet others consider the absorption of toxins from malfunctioning intestines as a cause. Axhausen and Pels[3] put forward the thesis that arthritis deformans is caused by a septic necrosis of cartilage or bone, and saw a close relation between this disease and the various epiphysial necroses, including osteochondritis dissecans; and some writers[4] even view the hyperplastic changes so characteristic of degenerative joint disease as a regenerative phenomenon. The importance of an inherited predisposition to the disease has been stressed, but most observers have regarded it as a process closely connected with the ageing of articular tissues.

In view of this great variety of aetiological hypotheses, many of which are unsupported by anatomical or laboratory evidence, Walter Bauer, when the Commonwealth Fund placed him in charge of the Robert W. Lovett Memorial Foundation for the study of crippling diseases at the Massachusetts General Hospital, resolved to study the anatomy and physiology of normal joints. Now he and his colleagues have published a classic monograph on the changes in the knee-joint at various ages.[5] They obtained knee-joints from necropsies or following amputation from 63 individuals ranging in age from one month to 90 years, who, so far as was known, had no history or clinical evidence of articular disease. All the joints were removed unopened, while care was taken to secure the nutrient arteries; they were all *x*-rayed before further examination. They were then opened and studied both macroscopically and microscopically. The results of these investigations are beautifully recorded with no fewer than 28 plates in their monograph. It was found that all the joints obtained from individuals beyond the age of 15 exhibited changes like those observed in hypertrophic arthritis. The findings indicated that joints remained unimpaired for a very short time after complete development. The material, therefore, not only allowed the authors to achieve their original purpose of establishing the normal conditions of the knee-joint at each age decade but enabled them to describe in detail the development of degenerative joint disease.

This condition first becomes manifest in the superficial layer of the articular cartilage in the second and third decennia. This tissue—smooth, glistening, translucent, resilient, and bluish-white in normal growing subjects—acquires a yellowish opaque colour and firmer texture indicating a progressive loss of elasticity, while at the same time the surface layers exhibit small blisters, linear grooves, and pits in those areas where weight-bearing is concentrated. Microscopically there are slight irregularities in the surface from which fibrillated shreds of tissue have been detached; here the cells of the uppermost stratum are more numerous and form a dense layer with their long axes parallel to the joint lumen. The subjacent matrix has comparatively fewer cells, and the intercellular substance is swollen. Individual cells are voluminous and heaped in small clusters. Alterations in the calcified zone of cartilage may be an early or late accompaniment of changes taking place in the overlying hyaline layers. Early swelling, altered staining reaction, and, finally, loss of cartilaginous matrix accompanied by cellular necrosis and the absence of any evidence of inflammation show the process to be one of primary degeneration. Though the first changes appear in articular cartilage, parallel developments appear in other parts of the joint. Those occurring at the articular margin are perhaps the most evident; they consist first of proliferating fibrous tissue, but with advancing years metaplastic fibrocartilage, hyaline cartilage, and bone develop. The cartilage-bone border, subchondral trabeculae, and cancellous spaces of the joints studied showed manifold but no constant pathological changes. In individuals over 40 the calcified layer of cartilage increased in thickness due to calcium deposits in the hyaline zone, and when these were extensive the end-plate of the subchondral bone was irregular as the result of spotty ossification stimulated by and advancing into areas of abnormal calcification. Changes in the synovial membrane occurred late, usually after the sixth decade; villous structures hanging as threads from the synovial surfaces were the most obvious abnormality.

Bauer and his colleagues point out that there are two fundamental causes which are probably the predisposing factors in every example of degenerative joint disease. One is the paucity of the cellular constituents of articular cartilage, its remoteness from blood supply, low respiratory rate, and extremely limited faculty for autogenous repair. The other is the effect of mechanical stress and strain resulting from joint function upon a tissue whose specific means of resistance to such use has been depleted. The most constantly observed concomitant to the so-called primary degenerative joint disease is increasing age.

[1] Palès, L., *Paléopathologie et Pathologie Comparatives*. 1930. **2**, Masson et Cie, Paris.
[2] *Internal Derangements of the Knee-Joint*, 1924, London.
[3] *Dtsch. Z. Chir.*, 1911, **110**, 515.
[4] Burckhardt, H., *Münch. med. Wschr.*, 1924, **71**, 1495; *Arch. klin. Chir.*, 1924, **132**, 706.
[5] *Changes in the Knee-Joint at Various Ages*, 1942, Commonwealth Fund, New York.

ANTI-VIVISECTION SOCIETIES AND INCOME TAX

For the past fifty years anti-vivisection societies have been granted exemption from income tax on interest on their very large investments, as the result of a finding in the case *In re* Foveaux (1895, 2 Chancery, 501) by Mr. Justice Chitty on the ground that "the intention is to benefit the community; whether, if they achieved their object, the community would, in fact, be benefited is a question on which, I think, the Court is not required to express an opinion." *In re* Grove-Grady, Plowden *v.* Lawrence (1929, 1 Chancery, 557) a very large bequest, to be administered solely by anti-vivisectionists for the benefit of animals, was successfully disputed on the ground that it would not benefit the public. In his judgment on that case Mr. Justice Russell (now Lord Russell of Killowen) threw doubt on the above decision when he said: "For instance, anti-vivisection societies, which were found to be charities by Mr. Justice Chitty, and were described by him as near the border-line, might possibly, in the light of later knowledge in regard to the benefits accruing to mankind from vivisection, be held not to be charities."

On the outbreak of war in September, 1939, Dr. G. P. Crowden, who had taken up the Grove-Grady Will case, proceeded on active service, and Sir Leonard Rogers took over his work as hon. secretary of the Research Defence Society in addition to his duties as hon. treasurer. In 1942 Sir Leonard drew up a memorandum on "Are Anti-vivisection Societies Good Charities?" This was much on the lines of his paper in the *St. Bartholomew's Hospital Journal* in 1941 entitled "The Case Against the Anti-vivisectionists: Their Anti-Public Health and Anti-War Efforts and their Cruelty to Animals." The committee of the Research Defence Society directed this memorandum to be sent to the Treasury, with the request that the grounds on which anti-vivisection societies were exempted from income tax as "charities" should be reconsidered in the light of the immense advances in curative and preventive medicine due to animal experiments during the last half-century. After a question on the subject had been put down in the House of Commons by Prof. A. V. Hill, Secretary to the Royal Society, the Inland Revenue authorities asked for evidence in support of the statements in the memorandum, and on receipt of this from nine medical and veterinary scientists a test case was heard in December, 1943, by the Special Commissioners of Income Tax. The commissioners spent three days in taking the evidence of the director and treasurer of the National Anti-Vivisection Society on one side, and of the following scientists on the other side: Major-Gen. L. T. Poole, Director of Pathology at the War Office; Sir Edward Mellanby, F.R.S., Secretary to the Medical Research Council; Dr. R. D. Lawrence; Dr. J. W. Trevan, Director of the Wellcome Physiological Research Laboratories; Sir John Ledingham, F.R.S.; Sir William Savage, President Society of Medical Officers of Health; Dr. J. H. Burn, F.R.S., Professor of Pharmacology in the University of Oxford; Prof. G. H. Wooldridge, Past-President of the Royal College of Veterinary Surgeons; and Sir Leonard Rogers, F.R.S., whose book *The Truth about Vivisection* was put in as evidence regarding the great advances in human and veterinary medicine subsequent to the verdict for the scientists in the final report of the Royal Commission published in 1912.

The findings of the Special Commissioners of Income Tax became public only when they were read in the course of an appeal in the King's Bench Division of the High Court before Mr. Justice Macnaghten, who gave his decision on July 27 of this year.[1] Owing to the General Election results having just appeared, the case received very scanty notice in the Press. The following are the essential points in the two findings. The Special Commissioners found (contrary to the contentions of the National Anti-Vivisection Society) that: "We are satisfied that the main object of the Society is the total abolition of vivisection, including in that term all experiments on living animals whether calculated to inflict pain or not, and (for that purpose) the repeal of the Cruelty to Animals Act, 1876, and the substitution of a new enactment prohibiting vivisection altogether." They also found that the evidence of "a number of very distinguished men called as witnesses for the Crown" proved conclusively that "(*a*) a large amount of present-day medical and scientific knowledge is due to experiments on living animals; (*b*) many valuable cures for and preventives of disease have been discovered and perfected by means of experiments on living animals, and much suffering both to human beings and to animals has been either prevented or alleviated thereby. We are satisfied that if experiments on living animals were to be forbidden (i.e., if vivisection were abolished) a very serious obstacle would be placed in the way of obtaining further medical and scientific knowledge calculated to be of benefit to the public. We were very impressed by the evidence of Major-Gen. Poole, Director of Pathology at the War Office, as to the great value of experiments on living animals in connexion with the successful carrying on of the present war by the maintenance of the health of the troops and the avoidance or minimizing of many diseases to which soldiers in the field are particularly liable."

The Special Commissioners concluded that if it was their function to weigh the assumed benefit from the Society's efforts in the "advancement of morals and education among men" (no express evidence in support of which has been given) such benefit "was far outweighed by the detriment to medical science and research and consequently to the public health which would result if the Society succeeded in achieving its object, and that, on balance, the object of the Society, so far from being for the public benefit, was gravely injurious thereto, with the result that the Society could not be regarded as a charity. . . . But, upon the authorities, we regard ourselves as precluded from so holding." The Special Commissioners therefore felt bound to allow the Society's claim. Mr. Justice Macnaghten, after hearing legal arguments for two days, reversed that decision by the following judgment: "In view of these authorities [quoted in the earlier part of his judgment] it was for the Society to prove affirmatively that it was a society established for charitable purposes only." Not only did the Society fail to prove that fact, but the evidence called for the opposition to the Society's claim proved that the main object of the Society was the total abolition of vivisection, and that the attainment of that object, so far from being

[1] *British Medical Journal*, Aug. 25, 1945, p. 265.

beneficial, would be gravely injurious to the community. In these circumstances it was the duty of the Special Commissioners to reject the Society's claim for exemption from income tax. "In my opinion, therefore, this appeal must be allowed, and the order granting the exemption must be revoked." Costs were allowed against the Society.

NEUROLOGICAL TRAINING OF THE FUTURE

Clinical neurology has for a century been one of the cynosures of British medicine. But time marches on, and hospital and medical services and undergraduate education are now the subject of close scrutiny. It is not surprising, therefore, that neurology, like psychiatry and paediatrics, should come up for review. Recent trends in general medicine and orthopaedics, as well as in neurosurgery and psychiatry, have tended to invade a domain long regarded as a neurological Tom Tiddler's ground. The recent report of the Royal College of Physicians Committee on Neurology is therefore of topical interest. The committee was elected to consider (1) the training of specialists in neurology, (2) the conditions of recognition as a consultant or specialist in neurology, and (3) the relation of neurology to general medicine and to psychiatry, with special reference to hospital and consultant services. The committee's report may not be wholly approved by all physicians, or even by all neurologists. Nevertheless it would be difficult to better it. It is arguable that neurology —like other specialties—should be left to develop in its own way and in its own time, without the help or hindrance of outside influences. So neurology has evolved in the past, and no one can decry its accomplishments. But circumstances are now proving too much for natural growth and development, and the radical changes which are likely to occur in medical education and in national hospital and health services cannot be ignored even by the most complacent or conservative.

The function of the neurologist in one way differs from that of the practitioners of some other aspects of medicine—e.g., psychiatry, tuberculosis—for the neurologist is a consultant rather than a specialist; he is a judge who sums up and advises as to the nature, origins, outcome of an illness, and the disposal of a sick person, and he is not the purveyor of a particular line of treatment. Hence neurologists have been comparatively few in number, self-selected, highly trained and experienced. If schedules of training should become necessary—and such may of course be deplored—then they must be exacting, eclectic, and extensive. Such epithets may be applied by some in criticism of the suggested programme of the neurological committee, which includes as minima: 18 months' whole-time study of general medicine after registration; the M.R.C.P.Lond. or its accepted equivalent; six months in the whole-time study of pathology, physiology, and anatomy of the nervous system, together with normal psychology; a year's devotion to psychiatry (including six months' hospital residence); and 18 months' study of clinical neurology (including a year's hospital residence). This means that the neurologist will be around 27 or 28 years of age before he leaves the embryo stage. At the end of that time he is advised to embark upon a period of foreign travel or of research. A hard apprenticeship indeed, but one that is necessary if the prestige of consulting neurology is to be maintained in international medicine. No discipline has yet suffered from the austerities of its regime, and the best types of anchorite will not be deterred by exacting conditions of entry or pupilage.

The committee in its report has not attempted to grasp the nettle of the future relationships with neurosurgery, though a period of six months as a whole-time house officer in a neurosurgical department will be accepted as part of the 18 months' compulsory service in clinical neurology. It does not favour a statutory register in present circumstances. Neither does it approve the creation of a special diploma in neurology, the consultant status of the neurologist being secured, it is felt, by a higher qualification in medicine. That financial assistance may well be required from official sources to maintain the neurological apprentice is fully appreciated by the College committee.

DELAYING EXCRETION OF PENICILLIN

One of the great handicaps of treatment with penicillin is its rapid excretion, which necessitates frequent injections and uses up much material. Various ways of circumventing this have been described, especially methods for delaying absorption from a subcutaneous site by mixing the penicillin with oil or by causing local vasoconstriction by adrenaline or by ice. Recently it has been reported by Beyer and his colleagues[1] that the action of penicillin can be prolonged by delaying its excretion through the kidney by the simultaneous administration of *p*-aminohippuric acid. Dogs were given a continuous intravenous infusion of 2.25% solution of aminohippurate at the rate of 3 c.cm. a minute, and a single intravenous injection of 10,000 units of penicillin. The concentration of *p*-aminohippuric acid in the plasma was 30 to 50 mg. per 100 c.cm. By this means the duration of detectable penicillin in the blood was almost doubled (4 hours instead of 2½ hours), the level was materially raised, and the amount excreted in the urine was correspondingly diminished. In later experiments[2,3] a mixture containing 5 units of penicillin per c.cm. and 1.5% sodium *p*-aminohippurate was given by continuous intravenous infusion for over 48 hours. The plasma concentration of penicillin was 2½ to 4 times as great as it would have been in the absence of aminohippurate. Beyer and his co-workers believe that penicillin is actively excreted by the tubule cells of the kidney and that this excretion is partly inhibited by aminohippurate. *P*-aminohippuric acid is said to be comparatively innocuous, and large amounts can be given without producing toxic symptoms.

Clinical trials of this procedure have been reported by Loewe and others.[3] They were treating patients with penicillin by continuous intravenous drip, and *p*-aminohippurate was given by the same means in doses up to 100 g. a day for periods of eight days. In most of the 50 patients this dose of aminohippurate produced only a low concentration of the compound in the blood (less than 10 mg. per 100 c.cm.) and there was no effect upon the blood concentration of penicillin. But in eight patients the blood concentration was greater than 10 mg. per 100 c.cm.; and in these the blood concentration of penicillin was increased three- to six-fold. Thus Loewe and his colleagues confirm in man the results obtained by Beyer and his colleagues in dogs; but at the same time they point out the difficulties in the way of successful clinical application. To maintain an adequate blood concentration of aminohippurate—e.g., 30 to 45 mg. per 100 c.cm.—it would be necessary to give 245 g. intravenously in 24 hours. No toxic effects were observed in any of the patients; nevertheless these amounts seem very large for a treatment which is only supplementary to another treatment.

The various devices for overcoming the rapid excretion of penicillin are ingenious, but they all introduce further

[1] *J. Pharmacol.*, 1944, **82**, 310.
[2] *Amer. J. med. Sci.*, 1945, **209**, 608.
[3] *Proc. Soc. exp. Biol.*, N.Y., 1945, **58**, 298.

complications into the treatment of the patient. The ideal solution of the problem is either to improve the supply of penicillin until it is plentiful and cheap enough to give by mouth regardless of waste, or to discover some derivative of penicillin with the same antibacterial action combined with more satisfactory pharmacological properties.

CYSTOMETRY

Cystometry is a comparatively new procedure, but one which is proving to be of increasing value as its application is more widely understood. Cystometry is much more than the mere measurement of bladder capacity, as the word seems rather to suggest; its usefulness lies in the practicability of making simultaneous measurements of capacity and intravesical pressure. From a study of these much can be learnt about normal bladder function and micturition—a subject which in man is still imperfectly understood. Moreover, nervous disorders affecting the bladder can be investigated with a completeness which has hitherto been notably lacking. In a recent article David Band,[1] after summarizing the accepted views on normal bladder innervation and micturition, describes the results obtained by cystometric studies in a series of cases of nerve disorders, including partial lesions such as transverse myelitis, and complete lesions where there is destruction either of the spinal cord or of the conus or corda equina. He shows how such examinations may not merely add to our knowledge of bladder function, but may also help the patient to live more comfortably. Of perhaps more general interest are the cases described of frequent or urgent micturition and enuresis typically met with in young patients who display no other neurological imperfections. Many officers, both medical and non-medical, have met with examples of this disorder during the war among young soldiers anxious to fight and psychologically normal. Cystometric investigations show that these patients have not got normal bladders. Clearly they deserve much sympathy and careful attempts to cure. The malingerer can quickly be detected. Band shows that ephedrine, by stimulating the sympathetic nerves of the hypogastric plexus, damps down the overactive detrusor muscle, and therefore may cure enuresis in selected cases.

The apparatus for cystometry is somewhat cumbrous and complicated, and, if unnecessary risks to the patient are to be avoided, should be used only by an expert.

NUTRITIVE VALUE OF FOODS

Nutritive Values of Wartime Foods (tables compiled for the Accessory Food Factors Committee) has been issued by the Medical Research Council as War Memorandum No. 14 (H.M.S.O., 1945, 1s.). Practically all of the 298 foods of these tables are peacetime as well as wartime foods, and it is highly desirable that the few exceptions such as "cod-liver oil, Ministry of Food" and "orange juice, Ministry of Food" should long be available as products of known and reliable potency. Thus the memorandum will be useful for long after the end of the war to all who desire to assess the values of the meals they eat or provide. For each food the average contents of water, protein, fat, carbohydrate, calories, calcium, iron, vitamin A (i.u.), vitamin B_1 (μg.), vitamin C (mg.), and wastage (%), are given per 100 g. of the edible portion. Individual samples may vary widely from these figures. Vitamin D (i.u.) and riboflavin (μg.) values per 100 g. of edible portion are given for certain foods. Probably all the likely sources of vitamin D have been examined, but it is fairly certain that many good sources of riboflavin will yet be discovered. Additional tables give the composition of foods "as purchased" per 100 g. and per oz., which will save the busy housewife some weighing in her own kitchen and also some arithmetic, but it will give her a less accurate estimate of the value of her meals. The memorandum is well printed, but the paper cover will withstand very little handling in either office or kitchen.

[1] *Brit. J. Urol.*, 1945, **17**, 1.

THE EXCEPTIONAL CHILD

Six papers are published in a report of the tenth conference on the exceptional child held in Baltimore by the Child Research Clinic of the Woods Schools, Langhorne, Pennsylvania. Those engaged in psychotherapy must remember that the mental health of a person cannot be gauged except in relation to the people round him; that a child never remains static, for both he and his behaviour are constantly changing; nor can mental health be divorced from physical health, and vice versa. "Psychotherapy should aim at making it possible for a particular patient to live within the limits of his equipment with other people, maybe with all other people, maybe with just a few other people, happily and without making a nuisance of himself." Most important in the child's environment is the mother, and she often needs treatment, not only advice, just as much as the child does. Until both are treated she will not enjoy the security which she can pass on to the child. Play is the normal method of expression for the child, and this can be used in elucidating his problems. A special technique is described called "the play-interview," in which the child is encouraged to carry on conversations between two or more dolls, thus revealing to himself and to the doctor the nature of his difficulties.

The educationist can take a hand in the problem of delinquency. The setting regarded as desirable to enable this to be done to the full is described, as are the methods whereby the retarded can take their place in the social complex. It is remarkable how often the parents of retarded children harbour a sense of grievance and guilt, and for their own sake and that of the child it is very necessary that such feelings should be removed by appropriate treatment. It ought to be remembered, however, that the vast majority of the people in the world are average and normal. A child's character and behaviour are largely influenced by the habits and convictions of the parents, but these in turn are determined by the attitudes of society; and it is most encouraging to know how quickly and completely social attitudes and habits can change. The true deviate alone cannot be influenced, and these abnormal personalities should be recognized. Sometimes the child is the deviate, and no treatment improves him, but sometimes a child who is really average, and therefore malleable, is brought for treatment by a parent who is a deviate and who cannot and will not allow the child to develop normally.

Two articles on the mite-borne disease commonly called scrub typhus—tsutsugamushi disease—appeared in the *Journal* of July 28: one on scrub typhus as a war disease by Major-Gen. Sir John Megaw, and the other a clinical study by Lieut.-Col. M. C. Menon and Capt. Colin Ibbotson. At that time the war with Japan had not come to an end, and it was forbidden on security grounds to mention that a successful prophylactic vaccine had been discovered and that at the request of the War Office the Ministry of Supply had undertaken to organize the production of this vaccine on a large scale for inoculating our troops in the Far East before the worst season of the year was upon them.

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Doctors all over the country are perturbed by the recent report of the Royal College of Obstetricians and Gynaecologists, whose findings obviously point to the establishment of a specialist midwifery service in which the general practitioner would be excluded from midwifery practice unless his qualifications conformed to conditions, not laid down by the General Medical Council, but by the Council of the College. They ignore an issue which has not so far been effectively put before the medical profession—namely, the proper position of domiciliary midwifery in the proposed National Health Service.

The whole position of domiciliary midwifery has in recent years been obscured by the housing shortage. The increased hospitalization of expectant mothers within this period is regarded by most obstetrical specialists as due to an increasing desire on the part of pregnant women for hospital care during their confinement and post-natal period, whereas a very large proportion of the women who have had experience of both hospital and domiciliary care would prefer the latter had they proper homes to live in. Much done in medicine to-day ignores the patient as an individual and the vital importance of his or her environment. Those ignorant of general practice fail to realize the reactions of the latter upon the individual and upon the family. The following article has been written in support of the doctors in the country who are doing domiciliary midwifery, and who wish not only that they themselves should continue but that their successors should continue what they regard as the most important part of general practice. We have also tried to show that many of the adverse criticisms of our work as practical obstetricians has not the support of recent investigation.

For a number of years, owing to the rapid development of the public health service, local authorities and many specialists have come to think only in terms of institutions and clinics and have failed to appreciate the basic fact that a successful health service must centre round an efficient general medical service. In no department of medicine is this latter fact more evident than in the practice of midwifery, where, with the general practitioner as a centre, you have on the one side the midwife, the district nurse, and the health visitor, and on the other the specialist and the maternity hospital; the combination of all, as illustrated in the terms of the Maternity Services (Scotland) Act, 1937, produces the ideal maternity service.

The provision of better trained and more efficient nurses, the facility of transport, and the prevention of complications by more careful ante-natal examination, have in recent years diminished the dangers and sufferings of pregnancy and labour, and, while reducing the anxiety of the midwife, family doctor, and specialist, have increased their capacity not only to deal with normal maternity cases but to anticipate complications and overcome difficulties to the ultimate advantage of mother and baby. Under the Maternity Services Act the family doctor has already realized that the more careful and skilful his ante-natal examination is the less trouble he has at the confinement.

Maternity practice is the very root of general practice; it produces the bond which unites the home with the family doctor, and the knowledge gained by the practitioner as family doctor not only compels him to see a maternity case in its true perspective, but is one of the main guides in ante-natal diagnosis towards a realization of his own capacity and his own limitations. To the obstetrical specialist the maternity patient is often little more than a case; he fails to realize that successful midwifery can be based only upon a co-operation between every factor which has for its ultimate aim the safety of mother and child. No clinic can take the place of the family doctor.

Exaggerated Fears

The dangers and difficulties of midwifery practice have of late years been magnified out of all proportion by specialists and public health officials. We contend that successful midwifery depends upon a sense of confidence and an absence of fear in the mind of the prospective mother. In the Scottish Report on Maternal Morbidity and Mortality, page 24, it is written: "There has been an unfortunate tendency of late to over-emphasize the dangers of child-bearing, and it is desired to take this opportunity to stress publicly the facts that pregnancy and parturition are natural physiological processes, and that departures from the normal occur only in a small proportion of cases. It is difficult to assess the reactions caused in women by fears unnecessarily aroused by indiscreet public emphasis upon accidents of child-bearing. There is no suggestion that scientific inquiry should be discouraged, but it is believed that disproportionate publicity of untoward results may itself aggravate a problem already sufficently difficult." A resolution in practically identical terms received the approval of one Representative Meeting of the B.M.A.

The case against the general practitioner's ability to practise midwifery successfully was based on evidence much of which has been proved wrong. The old belief that he is the main agent in spreading infection was long in dying; indeed there are still medical officers of health who have little knowledge of midwifery who hold this view. No reliable evidence is now put forward to support their case against us. In the large majority of domiciliary midwifery cases puerperal sepsis is infrequent, in spite of the fact that the family doctor is daily in contact with all manner of infectious diseases. On the other hand, such diseases as mastitis, phlegmasia alba dolens, etc.—diseases contracted as a result of labour or early in the puerperium, but which come to light some eight to ten days after the confinement—are much more common in hospital practice than in general practice. Want of an efficient system of follow-up prevents this fact being brought home to hospital staffs.

Use and Abuse of Forceps

It is unfortunately true that in the early years of the twentieth century there was too much "meddlesome midwifery." All are agreed that forceps were frequently used when they should not have been. As a result of a campaign against this evil, in which the general practitioner received much abuse from certain specialists, many go to the opposite extreme and fail to use forceps when their use would save suffering and even the loss of infant life. No experienced general practitioner would permit a prolonged second stage of labour when the suffering, supervention of shock, and trauma of the mother, perhaps her life, and the life of the infant could be saved by a few minutes' skilful use of forceps. Not long ago a general practitioner objected to the use of the word "interference," writing that "skilled conduct of midwifery is the ability to use skilled scientific methods when required." The experienced general practitioner has to tackle many cases which are beyond the capacity of the midwife, outside the sphere of the specialist, but which he is quite capable of dealing with successfully. Some time ago Dr. W. H. M. Wilson pointed out in these columns that the impaction of the head in the middle of the birth passages was a common cause of delay in labour, and that if this were realized "the conservative use of forceps would be an everyday matter and not a cause of horror, as it seems to be." He further wrote that "the country practitioner is now, as he had always been by force of circumstances, the acknowledged expert in cases which, without being abnormal, are really difficult."

Until quite recently injuries, particularly tears of the cervix, were put down to "meddlesome midwifery and hastily conducted labours," and, of course, the general practitioner had to shoulder most of the blame. Investigation has now proved that a very large proportion of tears of the cervix are the result of the forces of an uncontrolled Nature. Many of these tears are due to neglect to give analgesics when the os is dilating. In England, under the Midwives Acts, this is very common, but it is less common in Scotland where the doctor is in control of the case. A drug such as pethidine will help to relax a cervix early in labour and thus prevent its injury;

an anaesthetic with manual or instrumental help will save many a perineum. Midwives in Scotland under the Maternity Services Act are much more likely to send for the doctor to repair a torn perineum than are midwives in England, where the ridiculously low figures recently published for perineal tears in cases conducted by midwives make it clear that the latter are not sending for the doctor when they should. Under the Scottish Act the services of an anaesthetist are provided; this guarantees that in extensive tears repair will be more efficiently done.

Ante-natal Care

A big percentage of doctors were doing a large amount of ante-natal work long before this was undertaken by special clinics. Under the Maternity Services Act all medical practitioners are expected to carry out a minimum of three ante-natal examinations in every case they book. The public are becoming much more alive to the importance of ante-natal examination, and within two years of the inception of the Act the medical officer of health of Lanarkshire was able to report that 95.3% of mothers within his area had received ante-natal care.

The ideal place for ante-natal examination is the home of the patient or the surgery of the general practitioner. There is a real danger in the ante-natal clinic. In many cases the patients are scared by their waiting-room companions before they enter the clinic proper; when there, the listening to discussions between physicians, nurses, and students often adds an alarming element of dread to the thought of the coming confinement. It is wrong to discuss ante-natal findings and their possible treatment before prospective mothers, especially primiparae. Ante-natal examination calls for experience and skill, and, as one writer put it, "patients must be individualized in regard to diagnosis and treatment . . . there should be no such thing as mass production."

The purposes of ante-natal examination are to determine the fitness of the patient to carry on with her pregnancy, to educate and reassure her, to diagnose the relationship between her and her infant, and, within the bounds of possibility, to foresee the nature of the confinement and determine whether the case can be dealt with at home or should go to hospital. As in the case of all beneficent advances in medicine, ante-natal care carries with it certain dangers. It has been proved that among a considerable number of the younger, inexperienced obstetrical specialists the ultimate effect of various findings tends to be exaggerated, patients are alarmed, the power of Nature to overcome difficulties is forgotten, and measures are taken which may result, and have resulted, in the loss of maternal and infant lives where, had the case been left to Nature or in the hands of a general practitioner, all would have been well.

For some years the widespread and unnecessary use of Caesarean section or of induction of labour for difficulties which Nature herself, or the general practitioner in the quiet of the patient's own home, could overcome led to protests from influential quarters. Dr. Bright Bannister (1935) wrote "that the operation of Caesarean section occupies an unjustifiable position in obstetric practice to-day, that the incidence of the operation is far too high, and that it is attended by a mortality which makes it suspect among measures that should have for their aim the diminution of maternal mortality." Prof. F. J. Browne (1934) was equally emphatic when he wrote that "no one will deny that much of this intervention is unnecessary" and added, "I believe I am justified in saying that ante-natal care has often simply transferred mortality from one column to another."

Whether we have to deal with a case of toxaemia, disproportion, hyperemesis gravidarum, heart disease, or any of the other complications of pregnancy, no one is so fitted as the family doctor, knowing as he does the personal and family history of the patient and the patient's home conditions, to determine whether the case should be dealt with by himself and in the patient's own home or transferred to hospital. The most careful and experienced, be he general practitioner or specialist, can make an error of judgment in midwifery practice. This does not happen in the commoner difficulties, but in sudden and unforeseen emergencies; and even in the big majority of these cases the specialist can be called to the home of the patient and, with the assistance of the family doctor and nurse, deal successfully with the case.

It is possible that much of the present urge for institutional treatment is a passing phase and depends in large measure on the wretched housing of the majority of our working people. Hospitals we must have, but the ideal midwifery of the future must be based upon the principles which form the foundation of the Maternity Services (Scotland) Act, 1937—that is, close co-operation between general practitioner, midwife, specialist, and hospital.

Relief of Pain

The relief of pain in labour is of supreme importance to a large percentage of parturient women. It is the psychological build of a woman which determines her appreciation of pain, and from this point of view the family doctor, with his previous intimate knowledge of the woman, is in the best position to decide when an anaesthetic should be administered. In Scotland and England under the Midwives Acts midwives were discouraged from sending too often for the doctor. The Maternity Services (Scotland) Act recognizes the importance of relieving pain; the services of an anaesthetist, if necessary, are provided. In England specialists are advocating that midwives should have permission to administer anaesthetics; in Scotland we hold—and we are supported by the B.M.A.—that no midwife should be allowed to administer an anaesthetic without a general practitioner being present. It is very gratifying to note that in England, where in the past the relief of pain in labour was less considered than in Scotland, the insistence of the patient on obtaining relief of pain is resulting in more frequent calls by the midwife on the doctor.

There is no one in a better position to give valuable information regarding maternity nursing than the G.P. His opinion is never sought. It would be well were the Council of the Royal College of Obstetricians and Gynaecologists to appreciate the fact that a registered medical practitioner is a practitioner, and a registered nurse is a nurse, and apply this knowledge to the practice of domiciliary midwifery.

Queen's nurses have for many years, under the direction of the family doctor, conducted midwifery in the most satisfactory way, with efficiency, tact, and discretion. The outstanding feature of their service is the traditional co-operation between nurse and doctor. The midwife who has had a general nursing training has also these qualifications. In the training of midwives there is great need for instruction in ethics in order to impress upon them the importance of avoiding idle talk and discussing the condition of their patients with them. A patient must have perfect confidence in her nurse as in her physician. The longer a midwife remains in a district the better, for she gets to know her patients and they come to have confidence and trust in her. Local authorities tend to think too much in terms of institutions and too little in terms of the mothers' own homes, with the result that the changes of nurses are too frequent.

In maternity practice midwives do not seek medical aid sufficiently early and often. A nurse should realize, especially in cases of primiparae, the importance of sending for a doctor early in labour. When the os is dilating the doctor is able to lessen the patient's pain without injury to the foetus, and also to lessen the chance of injury to the cervix; he is able to allay the fears of the patient and her relatives and to guide and encourage the midwife.

The Teaching of Midwifery

Howat in the *Lancet* (1938), in discussing the many conflicting theories in well-known textbooks, remarked: "With teaching so copious, so various, so conflicting, confusing, and mistaken, choice is wide and perplexity almost inevitable. Small fact, it is not so much the fault of the general practitioner that his obstetrical skill is under a cloud as the fault of his teachment . . . Their published writings go to show that British teaching of midwifery to-day, almost without exception, hold and texion not that normal parturition is a normal function to be natur the performed so long as it progresses normally, but that its the process calling for active interference." We might add that was many teaching centres students are strongly advised, in lication where there is the slightest deviation from the normal, ated from

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The case against the general practitioner's ability to practise midwifery successfully was based on evidence much of which has been proved wrong. The old belief that he is the main agent in spreading infection was long in dying; indeed there are still medical officers of health who have little knowledge of midwifery who hold this view. No reliable evidence is now put forward to support their case against us. In the large majority of domiciliary midwifery cases puerperal sepsis is infrequent, in spite of the fact that the family doctor is daily in contact with all manner of infectious diseases. On the other hand, such diseases as mastitis, phlegmasia alba dolens, etc.—diseases contracted as a result of labour or early in the puerperium, but which come to light some eight to ten days after the confinement—are much more common in hospital practice than in general practice. Want of an efficient system of follow-up prevents this fact being brought home to hospital staffs.

Use and Abuse of Forceps

It is unfortunately true that in the early years of the twentieth century there was too much "meddlesome midwifery." All are agreed that forceps were frequently used when they should not have been. As a result of a campaign against this evil, in which the general practitioner received much abuse from certain specialists, many go to the opposite extreme and fail to use forceps when their use would save suffering and even the loss of infant life. No experienced general practitioner would permit a prolonged second stage of labour when the suffering, supervention of shock, and trauma of the mother, perhaps her life, and the life of the infant could be saved by a few minutes' skilful use of forceps. Not long ago a general practitioner objected to the use of the word "interference," writing that "skilled conduct of midwifery is the ability to use skilled scientific methods when required." The experienced general practitioner has to tackle many cases which are beyond the capacity of the midwife, outside the sphere of the specialist, but which he is quite capable of dealing with successfully. Some time ago Dr. W. H. M. Wilson pointed out in these columns that the impaction of the head in the middle of the birth passages was a common cause of delay in labour, and that if this were realized "the conservative use of forceps would be an everyday matter and not a cause of horror, as it seems to be." He further wrote that "the country practitioner is now, as he had always been by force of circumstances, the acknowledged expert in cases which, without being abnormal, are really difficult."

Until quite recently injuries, particularly tears of the cervix, were put down to "meddlesome midwifery and hastily conducted labours," and, of course, the general practitioner had to shoulder most of the blame. Investigation has now proved that a very large proportion of tears of the cervix are the result of the forces of an uncontrolled Nature. Many of these tears are due to neglect to give analgesics when the os is dilating. In England, under the Midwives Acts, this is very common, but it is less common in Scotland where the doctor is in control of the case. A drug such as pethidine will help to relax a cervix early in labour and thus prevent its injury;

an anaesthetic with manual or instrumental help will save many a perineum. Midwives in Scotland under the Maternity Services Act are much more likely to send for the doctor to repair a torn perineum than are midwives in England, where the ridiculously low figures recently published for perineal tears in cases conducted by midwives make it clear that the latter are not sending for the doctor when they should. Under the Scottish Act the services of an anaesthetist are provided; this guarantees that in extensive tears repair will be more efficiently done.

Ante-natal Care

A big percentage of doctors were doing a large amount of ante-natal work long before this was undertaken by special clinics. Under the Maternity Services Act all medical practitioners are expected to carry out a minimum of three ante-natal examinations in every case they book. The public are becoming much more alive to the importance of ante-natal examination, and within two years of the inception of the Act the medical officer of health of Lanarkshire was able to report that 95.3% of mothers within his area had received ante-natal care.

The ideal place for ante-natal examination is the home of the patient or the surgery of the general practitioner. There is a real danger in the ante-natal clinic. In many cases the patients are scared by their waiting-room companions before they enter the clinic proper; when there, the listening to discussions between physicians, nurses, and students often adds an alarming element of dread to the thought of the coming confinement. It is wrong to discuss ante-natal findings and their possible treatment before prospective mothers, especially primiparae. Ante-natal examination calls for experience and skill, and, as one writer put it, "patients must be individualized in regard to diagnosis and treatment . . . there should be no such thing as mass production."

The purposes of ante-natal examination are to determine the fitness of the patient to carry on with her pregnancy, to educate and reassure her, to diagnose the relationship between her and her infant, and, within the bounds of possibility, to foresee the nature of the confinement and determine whether the case can be dealt with at home or should go to hospital. As in the case of all beneficent advances in medicine, ante-natal care carries with it certain dangers. It has been proved that among a considerable number of the younger, inexperienced obstetrical specialists the ultimate effect of various findings tends to be exaggerated, patients are alarmed, the power of Nature to overcome difficulties is forgotten, and measures are taken which may result, and have resulted, in the loss of maternal and infant lives where, had the case been left to Nature or in the hands of a general practitioner, all would have been well.

For some years the widespread and unnecessary use of Caesarean section or of induction of labour for difficulties which Nature herself, or the general practitioner in the quiet of the patient's own home, could overcome led to protests from influential quarters. Dr. Bright Bannister (1935) wrote "that the operation of Caesarean section occupies an unjustifiable position in obstetric practice to-day, that the incidence of the operation is far too high, and that it is attended by a mortality which makes it suspect among measures that should have for their aim the diminution of maternal mortality." Prof. F. J. Browne (1934) was equally emphatic when he wrote that "no one will deny that much of this intervention is unnecessary" and added, "I believe I am justified in saying that ante-natal care has often simply transferred mortality from one column to another."

Whether we have to deal with a case of toxaemia, disproportion, hyperemesis gravidarum, heart disease, or any of the other complications of pregnancy, no one is so fitted as the family doctor, knowing as he does the personal and family history of the patient and the patient's home conditions, to determine whether the case should be dealt with by himself and in the patient's own home or transferred to hospital. The most careful and experienced, be he general practitioner or specialist, can make an error of judgment in midwifery practice. This does not happen in the commoner difficulties, but in sudden and unforeseen emergencies; and even in the big majority of these cases the specialist can be called to the home of the patient and, with the assistance of the family doctor and nurse, deal successfully with the case.

It is possible that much of the present urge for institutional treatment is a passing phase and depends in large measure on the wretched housing of the majority of our working people. Hospitals we must have, but the ideal midwifery of the future must be based upon the principles which form the foundation of the Maternity Services (Scotland) Act, 1937—that is, close co-operation between general practitioner, midwife, specialist, and hospital.

Relief of Pain

The relief of pain in labour is of supreme importance to a large percentage of parturient women. It is the psychological build of a woman which determines her appreciation of pain, and from this point of view the family doctor, with his previous intimate knowledge of the woman, is in the best position to decide when an anaesthetic should be administered. In Scotland and England under the Midwives Acts midwives were discouraged from sending too often for the doctor. The Maternity Services (Scotland) Act recognizes the importance of relieving pain; the services of an anaesthetist, if necessary, are provided. In England specialists are advocating that midwives should have permission to administer anaesthetics; in Scotland we hold—and we are supported by the B.M.A.—that no midwife should be allowed to administer an anaesthetic without a general practitioner being present. It is very gratifying to note that in England, where in the past the relief of pain in labour was less considered than in Scotland, the insistence of the patient on obtaining relief of pain is resulting in more frequent calls by the midwife on the doctor.

There is no one in a better position to give valuable information regarding maternity nursing than the G.P. His opinion is never sought. It would be well were the Council of the Royal College of Obstetricians and Gynaecologists to appreciate the fact that a registered medical practitioner is a practitioner, and a registered nurse is a nurse, and apply this knowledge to the practice of domiciliary midwifery.

Queen's nurses have for many years, under the direction of the family doctor, conducted midwifery in the most satisfactory way, with efficiency, tact, and discretion. The outstanding feature of their service is the traditional co-operation between nurse and doctor. The midwife who has had a general nursing training has also these qualifications. In the training of midwives there is great need for instruction in ethics in order to impress upon them the importance of avoiding idle talk and discussing the condition of their patients with them. A patient must have perfect confidence in her nurse as in her physician. The longer a midwife remains in a district the better, for she gets to know her patients and they come to have confidence and trust in her. Local authorities tend to think too much in terms of institutions and too little in terms of the mothers' own homes, with the result that the changes of nurses are too frequent.

In maternity practice midwives do not seek medical aid sufficiently early and often. A nurse should realize, especially in cases of primiparae, the importance of sending for a doctor early in labour. When the os is dilating the doctor is able to lessen the patient's pain without injury to the foetus, and also to lessen the chance of injury to the cervix; he is able to allay the fears of the patient and her relatives and to guide and encourage the midwife.

The Teaching of Midwifery

Howat in the *Lancet* (1938), in discussing the many conflicting theories in well-known textbooks, remarked: "With teaching so copious, so various, so conflicting, confusing, and mistaken, choice is wide and perplexity almost inevitable. In fact, it is not so much the fault of the general practitioner that his obstetrical skill is under a cloud as the fault of his teachers. . . . Their published writings go to show that British teachers of midwifery to-day, almost without exception, hold and teach not that normal parturition is a normal function to be naturally performed so long as it progresses normally, but that it is a process calling for active interference." We might add that in many teaching centres students are strongly advised, in cases where there is the slightest deviation from the normal, either to

call in a specialist or to send the patient to hospital. Such is the modern training.

General practitioners who, during the past ten years, have read articles upon midwifery, followed discussions upon antenatal care, etc., and appreciated the conflicting views expressed are not surprised to find that some obstetricians are uneasy about their ability to teach midwifery successfully to their students. Happily physicians have not the same feeling about their teachers of medicine and surgery, and yet, after all, a much greater part of their surgery work requires reference to a specialist. The obstetrical specialist and the G.P. always approach the subject from a different angle. General practitioners as a body are very conservative, and this has been their salvation, or rather the salvation of their patients, when faced with the ever-changing teaching of the specialists.

According to some obstetrical specialists the perineum is a danger spot which must not be touched during the course of labour; vaginal examination is almost an obstetric crime. We general practitioners examine our patients per vaginam as often as we think necessary, and it is comforting to be told by a well-known obstetrician that he has still to be convinced that digital vaginal examination is a danger to a woman in labour, and that "he was prepared to argue that anyone who has not sufficient knowledge to make an examination in a surgically clean manner has no business to attend a confinement." Within recent years no new era has dawned upon hospital and specialist obstetric practice, the outstanding factors in the reduction of maternal mortality being sulphanilamide therapy and blood transfusion.

By far the best method of learning midwifery practice for both doctors and nurses is the direct one—that is, to sit at the bedside of a woman in labour. Attendance at many normal labours is of the greatest help when it comes to tackling the difficult and abnormal case, and it would assist the hospital specialist and hospital practice if the specialist gave more attention than he does to the normal and itched less to interfere with the course of Nature. We would like to point out to those obstetricians who have been so prominent in belittling the general practitioner's ability to practise midwifery successfully that they would have gained considerably in manipulative skill, and also gained a real knowledge of the parturient woman, if, before they had specialized, they had spent a few years in general practice. Then they might have appreciated the many difficulties the family doctor encounters in his daily work.

Conclusion

We would assure Mr. Eardley Holland (vide *Practitioner*, January, 1945) that the team-work upon which, he contends, the successful practice of modern midwifery depends will be found in Scotland where the Maternity Services (Scotland) Act, 1937, is in operation, and that there is no tail. This Act has changed the whole future of maternity practice in Scotland, and England would be wise to follow our lead. It is hardly necessary to add that in the proposed National Health Service the maternity services would not be under the direction of the local authority. The psychological effect of the presence of friendly and sympathetic people in familiar surroundings upon a woman in labour cannot be overestimated. Domiciliary midwifery, with the woman in the hands of a doctor and nurse in whom she has confidence, is safer for mother and infant, in all but a small minority of cases, than institutional midwifery. When the housing shortage has been remedied there will be a great increase in domiciliary midwifery to the advantage of the whole country.

Finally let us quote two outstanding medical women. Dame Janet Campbell writes: "No woman ought to lack, on account of poverty, anything she needs during childbirth. The great thing is to make midwifery in the poorer houses sufficiently attractive for the family doctor to take it up and study it more closely." This has been done in Scotland. Dame Louise McIlroy writes: "There were those who considered that the mothers of the country would be best served by a whole-time midwifery service, and the general practitioner would have to go, but it seemed a pity, for the general practitioner provided a human element lacking in a different service. Take prevention, which was the slogan of legislators; there was no one more capable of instituting preventive measures than the family doctor. He was the first line of defence, knowing the family and its circumstances, treating the little ailments of the prospective mother, and forestalling complications."

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AGENDA FOR PLANNING LONDON HOSPITALS

KING EDWARD'S FUND PROPOSALS

Yet another report on London hospitals, this time the work of a joint committee of King Edward's Hospital Fund for London and the Voluntary Hospitals Committee, makes its contribution to the solving of the largest if not the most difficult of hospital planning problems. It runs parallel with the recent survey of hospital services by Dr. A. M. H. Gray and Dr. A. Topping (reviewed in the *British Medical Journal* of July 14, p. 56) and reaches substantially the same conclusions.

It is now generally recognized that the hospital services of London cannot be planned without taking into account the extent to which the Home Counties look to London for hospital facilities. Before the war about 40% of the patients treated in the voluntary hospitals of London came from outside the County of London boundaries. There is a continuing tendency for the London population—its industries as well as its homes—to move outwards; means of transport between the centre and the periphery have improved out of all knowledge; but hospital provision has not shared this tendency to any great extent. Even if, in future, large additional hospitals are put up in the outer areas the great hospitals of Central London will still be looked to for highly specialized services.

The area of London and the Home Counties must, therefore, be planned as a whole. It can be divided roughly into three zones: the central area with a heavy concentration of beds and a declining residential population, the industrial and dormitory area with a shortage of beds and a rapidly increasing population, and the more rural areas centred on local towns. The hospitals in this great region vary much in size and function. The local authorities have a number of large, up-to-date, and well-equipped hospitals side by side with old-fashioned and unhygienic institutions still administered under the Poor Law. On the voluntary side there are hospitals ranging from the very largest to small ones of 60 beds or so, which, however, have been classed as general rather than as cottage hospitals.

Hospitals in Transition

The report discusses the transition from the cottage to the general hospital. Such a transition implies that the general hospital will lay itself out to deal with the whole range of "acute" work likely to arise in its locality. It must provide a consultant staff with clinical responsibility for the patients under their care, a resident medical staff, a nursing staff of the required competence, all proper ancillary services, out-patient clinics, and the commoner special in-patient departments, such as ear, nose, and throat. Efficiency demands a bed complement somewhere in the neighbourhood of 150, and a hospital with 150 beds should afford sufficient work to warrant the employment of at least three resident medical officers, in addition to one or more registrars.

> "It would . . . make for progress if it were recognized that a hospital with less than 150 beds—other, of course, than a cottage hospital staffed by general practitioners—is unlikely to be able to provide a complete service, and should therefore be regarded as in a state of transition, and as not yet having fully attained to the status and responsibilities of a general hospital."

It is common ground that it is not yet practicable to propose that all the members of staffs of the smaller general hospitals, and even of some larger hospitals in the Home Counties, should be consultants, giving their whole time to general medicine or surgery or to a specialty; but it is desirable, say the authors of this report, that in future such appointments should be restricted to practitioners who have served for a period of not less than two years in a hospital or unit devoted to the special work they propose to undertake.

Is there an economic size for the larger general hospital? Would it be wise to encourage the ultimate development of voluntary general hospitals to a size approaching that of the average local authority hospital? There has grown up in recent years a belief that a large hospital, say of 700 or 800 beds, is *per se* more efficient than a small hospital. Undoubtedly that is true in some respects, but the authors of this report are of opinion that the argument in favour of the large hospital may be carried too far, and that the case for the small general hospital rests on much firmer ground than appears at first sight. By "small" anything under 700 beds is meant.

A Plea for the "Small" Hospital

The smaller hospital has certain advantages over the large unit: it serves a more local population; it is well known to its patients; and it can more easily ensure a friendly and personal atmosphere, which means much to the sick person.

"We do not believe that the voluntary hospital is called upon to compete with the local authority hospital in size, and we think there would be a real danger of voluntary effort failing to make its special contribution in terms of quality of service if too ambitious a programme were undertaken with the help of public monies."

In the Central London area it is considered that there is little justification for general hospitals of fewer than 100 beds. These hospitals might well join forces with each other or with a larger neighbour, with the ultimate object of a physical amalgamation; but in industrial and dormitory areas the elimination of the smaller hospital would be a serious loss to the life of the communities. Perhaps in time these hospitals might develop into large hospitals providing a comprehensive service.

In the outermost zone of the London and Home Counties region the hospitals are mainly located in towns of medium size, and they serve rural areas. The majority of the voluntary hospitals are of the cottage type. It is urged that there should be a full acceptance of the difference between a general and a cottage hospital, the upgrading of all those units where circumstances justify the development into a general hospital, and an overhaul of consultant medical staff in such a way as to bring a regular system of visiting of cottage hospitals by consultants into the realm of practical politics. It is considered that a working arrangement between the voluntary and the local authority hospitals would be greatly facilitated if they shared to a certain extent the same consultant staff. Moreover, the appointment of the same consultant to two or more hospitals in the same area would probably provide him with sufficient work to make it worth his while to live in the neighbourhood.

For cottage hospitals the report lays it down that any such hospital with 50 or more beds should have a resident medical officer. Beds at a cottage hospital should be available to all general practitioners in the neighbourhood, subject always to the approval of the committee of management. Other recommendations concern special hospitals, which play an important part in postgraduate education and in research; the provision of accommodation for the chronic sick; and the establishment of out-patient departments and an ambulance service.

The authors of the report are critical of the proposal of a central bureau for controlling admissions. Such a plan would be contrary to the principle of free choice of hospital. The more important step would be to raise the standard of medical and nursing care in those hospitals in which it is unsatisfactory, so that they would attract more cases, and the unwieldy waiting-lists attaching to some hospitals would be diminished.

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COURSES IN HOSPITAL CATERING

The Nuffield Provincial Hospitals Trust has taken the lead in initiating, as an experiment, refresher courses in catering at three Provincial centres. These courses are to be held at Birmingham, Leeds, and Wolverhampton, where the Boards of Management of the Birmingham United Hospital (Queen Elizabeth Hospital), the General Infirmary at Leeds, and the Royal Hospital, Wolverhampton, readily agreed to co-operate and are making available all the necessary facilities and the staff required for the conduct of the courses.

This development in the Provinces follows the successful results of the course at the London Hospital arranged by King Edward's Hospital Fund for London. The syllabus for the courses includes lectures and demonstrations, classification of foods, administration of food and catering departments, buying and ordering, special diets, menu planning, cooking and serving of foods, rationing, and allowances. The planning of the courses has been undertaken by the responsible officers at each of the hospitals, and they have had the advice and assistance of Miss Rose Simmonds, chairman of the British Dietetic Association.

The courses, each consisting of six sessions, are open to administrators, matrons and assistant matrons, dietitians and catering officers, stewards, housekeeping sisters, and cooks of hospitals in the areas adjacent to each of the three hospitals mentioned above, and no fee is required of those attending. The Wolverhampton and Birmingham courses begin on Sept. 11 and 15 respectively; the one at Leeds opened on Aug. 14.

TYPHUS FEVER PANEL

In February, 1942, reference was made in these pages to the establishment by the Ministry of Health of a Typhus Panel. The lack of opportunity for the medical profession in this country to become familiar with typhus fever has not infrequently resulted in a mistaken diagnosis. In the circumstances, a panel of 8 to 10 consultants established in different parts of the country was formed. Gaps have now appeared in this panel, and the Chief Medical Officer of the Ministry of Health would be grateful to hear from medical men who have had the necessary clinical experience and who are willing on occasion to assist in the diagnosis of typhus in the districts in which they live. A fee of 5 guineas and out-of-pocket expenses will be paid by the Minister if and when a member of the panel is called upon to act. The consultant is required to provide the Minister with a written report on each case seen.

APPOINTMENT OF REGISTRAR-GENERAL

The King has approved the appointment of Mr. G. C. North, *M.C.*, LL.B., a Principal Assistant Secretary in the Ministry of Health, to be Registrar-General upon the retirement, at the age of 65, of Sir Sylvanus P. Vivian, C.B., on Sept. 30, 1945. Sir Sylvanus Vivian has been Registrar-General since 1921. He began his career in the Inland Revenue Department in 1903. In 1913 he was Assistant Secretary to the National Health Insurance Commission, and during the last war served in both the Ministry of Food and the Ministry of National Service. Mr. G. C. North joined the Ministry of Health in 1921, and has had wide experience of health and housing administration, including international health matters. He served as private secretary to Miss Susan Lawrence and Sir Edward Forber at the Ministry; Secretary, National Radium Trust, 1931-7; acted as secretary of various Departmental Committees, including the Advisory Committee on Water and the Advisory Committee on Therapeutic Substances; member of the British Delegation to the League of Nations Assembly, 1930; also worked in connexion with the International Health Office in Paris; Ministry representative on the Central Council for Health Education, and on the Executive of the National Federation of Women's Institutes.

The pamphlet, *Colonial Research 1944-5* (Cmd. 6663, H.M. Stationery Office, 6d.), includes the second annual report of the Colonial Research Committee, constituted jointly by the Secretary of State for the Colonies and the Medical Research Council, under the chairmanship of Sir Edward Mellanby, with Dr. W. H. Kauntze as vice-chairman and Dr. F. Hawking as secretary. No specific schemes for medical research involving substantial expenditure were before the committee during the year, but plans were made to continue studies on the bionomics of *Anopheles gambiae* in Sierra Leone and Nigeria, and for field trials of the insecticide D.D.T. Definitive reports on trials of D.D.T. in British Guiana during the year were not available, but preliminary accounts indicated that this material will certainly be a most important addition to the armamentarium of the malariologist, and may in fact prove to be the first really efficient means of controlling malaria in rural as well as in urban and closely settled areas. In the hands of workers in Africa, advised and guided by Prof. P. A. Buxton, it has been shown that D.D.T. is toxic to the tsetse-fly, the vector of trypanosomiasis. With regard to D.D.T. generally, the committee does not consider the promise shown by this or any other substance of like activity justifies as yet any relaxation of orthodox and tested antimalarial measures. Nor does it consider that there is any cause to relax efforts to increase supplies of quinine, which, despite the development of valuable synthetic drugs for the prevention and cure of malaria, remains of outstanding importance as the easiest and safest drug to use without close and constant supervision.

Correspondence

Ambulatory Treatment of Duodenal Ulcer in a Factory

SIR,—Towards the end of two years' enforced absence from general practice it was my good fortune to fall on a book, *Endocrinology in General Practice*, by William Wolf, M.D. On the subject of peptic ulcer he states, like most authors, that the pathogenesis of peptic ulcer is still undecided, but points to "involvement of the endocrine glands through the sympathetic nervous system." From these premisses he builds up his argument on a physiological basis as to the causation of peptic ulcer, and his conclusion seems justified. Further, he states that Metz carried out the treatment of peptic ulcer with posterior pituitary extract snuff with good results. To a sufferer of 20 years' standing, who had undergone an operation for perforation of the duodenum and who had consulted several specialists, it was a relief to know that at least there was a departure from the usual practice of treatment by rest, diet, and alkalis—a treatment which, like my fellow-practitioners, I had carried out for many years with very poor results. In my own case I had adhered rigidly to all medicines and diet prescribed, but even with that I had freedom from pain for only two or three weeks between attacks which lasted for two to three months. It was then I concluded that diet had little to do with the causation or treatment of peptic ulcer: rest I had in plenty, yet pain, sickness, and vomiting were my constant companions.

I began work again in May, 1939, and after having several severe attacks I started, in January, 1940, Metz's treatment with posterior pituitary extract snuff insufflation 50 mg. at 11 a.m. and 7 p.m.; diet was not restricted. I remained completely free from pain, sickness, and vomiting from January, 1940, to September, 1940, when I had an attack. I again commenced the "snuff," which cut short the period of two to three months to as many weeks. I remained free from attack until December, 1941. Again the remedy was taken with excellent results. In April, 1943, I was *x*-rayed and the report was "deformity of the duodenal cap." Since then I have had two attacks; in all, I have been off work for three weeks since 1939 with duodenal ulcer complaint. I trace the attacks to worry and chill and probably overwork.

From May, 1939, to May, 1944, my work consisted, in the most part, of the examination of men for His Majesty's Forces, and I had little opportunity for treating ulcer cases. In May, 1944, I took a position as medical officer to Scottish Aviation Limited, Prestwick Airport, Ayrshire, and was not surprised to find a big number of workmen suffering from duodenal ulcer and thereby losing much time. In October, 1944, I approached the directors, explained to them my own experience of duodenal ulcer, and asked for permission to treat the workmen. They were interested; not only did they grant my request but stated their willingness to bear the expense.

A number of men with duodenal ulcers proved by *x*-ray were interviewed, and it was agreed that treatment should be carried out, subject to the approval of their own doctors. Only a few withheld consent. The advantage of this ambulatory treatment is that it can be carried out while the men are at work. Each man was examined in the following manner: family history, past history, history of stomach complaint; and the effect of weather, worry, anxiety, fatigue, and fear. The different patients' systems were examined. In two cases organic disease of the lung and organic disease of the heart were found and their doctors duly notified. Treatment began on October 27, 1944. Treatment: posterior pituitary extract snuff 50 mg. at 11 a.m. and 7 p.m. by insufflation, to which I added half a grain of phenobarbitone half an hour before bedtime. The powders were given for 14 days and the pellets for 28 days. The histories were varied—the men had suffered from the condition for from 1 to 20 years, many had been discharged from the Services, many had histories of duodenal perforation, and most at one time had been in-patients. Treatment ended on April 2, 1945, and the results to the present show that, of 75 cases treated, 60 have had no pain. Two have been *x*-rayed; in one case "no duodenal ulcer was found" and in the other case there was "deformity of the duodenal cap."

It is reckoned that many hundreds of working hours have been saved by this treatment. My purpose in making this report now is that, owing to the possibility of my losing some of my patients through their return to peacetime occupations, I availed myself of my present opportunity of having their reports while they are still with Scottish Aviation Limited.—I am, etc.,

Prestwick Airport, Ayrshire. JOHN STEVENSON.

Treatment of Infective Hepatitis

SIR,—We have followed with interest the recent publications on the use of choline and methionine in the treatment of hepatitis and jaundice, and we wish to put forward certain points about the dosage. That the substances are lipotropic and that they can exert a curative effect on certain types of liver pathology is certain, at any rate so far as animals are concerned. The use of these substances in man does not appear to have met with the same success, few of the investigators suggesting more than slight statistical evidence of improvement. We suggest that these results should not lead to abandoning the use of the substances but to a more careful metabolic assessment on an increased dosage.

It may be of interest to compare the dose used in these trials on men with those which have proved effective in animals. In animals in order to prevent the appearance of a fatty liver methionine should be given in doses of 20 mg. per kilo body weight. Choline appears to be effective in the same dose (Frame, 1941). For a man of 70 kilos it would appear that 1.5 grammes per day of either substance is the minimum prophylactic dose. The point to be stressed, however, is that these are prophylactic doses: the curative dose of choline is 3 to 4 times larger—70 mg. per rat per diem according to Best and Huntsman (1935). Experimental evidence is lacking on the curative dose of methionine. If this is assumed to be either equivalent to choline as in prophylaxis, or on the basis of methyl groups three times greater, then the curative dose in man would be 20 grammes of choline a day for two or three weeks, or 20–60 grammes of methionine a day for a period as yet undetermined.

Beattie (1944) gave methionine intravenously in 10-gramme doses with some success, and we have been using similar amounts of either methionine or choline. The intravenous route was selected because oral administration may lead in some cases to sickness (Higgins *et al.*, 1945; Albanese *et al.*, 1944), and also to ensure complete absorption. Spill-over by the kidneys is only small. We have found that the total loss of unchanged methionine in the urine is only about 70 mg. per dose.

Using doses of this size leads in nearly every case to ketosis; the ketone being acetone and β-hydroxybutyric in the case of methionine, and an unidentified ketone or aldehyde in the case of choline. The presence of these ketones would suggest increased fat embolism. In patients with existing albuminuria both substances lead to its decrease or disappearance, although it should be noted that in normal men the same dosage of methionine actually leads to albuminuria.

We are reporting elsewhere the results of our experiments, but in two cases we have had results as dramatic as those reported by Beattie.

Since the results of clinical trials using small doses, statistical evaluation, and in many cases inadequate metabolic studies, have been generally inconclusive, your leading article (March 24, p. 415) suggests that the expense involved does not warrant the use of methionine in the treatment of jaundice. This conclusion might well lead to the abandonment of a life-saving measure in certain cases.—We are, etc.,

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Acute Surgical Emergencies and Pulmonary Tuberculosis

SIR,—Patients having collapse therapy for pulmonary tuberculosis are, equally with others, subject to the risk of acute surgical conditions requiring laparotomy. If they are under care in a sanatorium the combined treatment can generally be achieved with adequate supervision, but in some cases where patients are admitted to a surgical ward in a general hospital it appears that treatment for the pulmonary condition is not maintained.

All sanatorium physicians have, from time to time, readmitted patients after acute operations on the abdomen who have lost an artificial pneumothorax previously well established, with resulting reactivation of the tuberculous disease. As an example I may quote the history of a young woman with a left artificial pneumothorax, able to work, who developed an acute intussusception which was successfully operated upon in a general hospital many miles away. Unfortunately no attention was paid to the pulmonary disease; the pneumothorax was found completely obliterated on her next attendance, and the reactivated disease caused her death nine months later.

I would therefore urge that surgeons faced with such a situation should, as for an equal emergency, call at once for expert maintenance of the collapse therapy: house-surgeons are generally not competent to undertake this. The operation and the administration of an anaesthetic can cause a pneumothorax to be lost in a day, and the result may be ultimately as fatal to the patient as neglect of the surgical condition.—I am, etc.,

Clare Hall Hospital, South Mimms. F. A. H. SIMMONDS.

Treatment of Severe Paronychia

SIR,—The *Journal* of June 30 has just reached me, in which Drs. G. J. Grossmark and L. W. Plewes describe (p. 906) the treatment of hand infections with penicillin. I note that 14 out of 32 cases of paronychia had pus under the nail, and that the average time off work from the start of penicillin treatment was 12 days.

Recently at sea a rating reported with a severe paronychia about 12 hours old. Frequent hot bathing and poulticing during the next 12 hours produced a grossly swollen and painful terminal phalanx, with tense red skin all round the base of the nail and visible pus beneath it. This was clearly a case for the classical two lateral incisions and ribbon gauze under the flap, but such a procedure single-handed at sea is not always easy, and it was decided to try to drain the finger through the nail. A pointed wire 1/16 in. in diameter was heated and applied to the nail over the pus. The pressure caused some pain, but it was only necessary to heat the wire three times before pus welled up through the hole with instant relief. About six holes were thus burnt through (only the first was painful), and in all at least 1 c.cm. of pus was obtained. That night the patient slept well, and next morning the finger appeared much improved. A few of the holes were reopened and some more pus extruded; pressure on the skin proximal to the nail caused pus to appear, thus proving that the whole of the area was capable of being drained through the nail. Heat was applied during the second day, and by the third morning no more pus appeared and the finger was symptomless except for slight tenderness. By the fifth morning this rating was considered fit to return to full duty, including scrubbing out his mess, and there has been no relapse. No other form of treatment, except a sling, was used.

This most encouraging result, when successful, far surpasses any other form of treatment as regards simplicity, lack of pain and subsequent deformity, and quick return to work. This is the only case I have yet tried, and it may, of course, prove to be useless in others.—I am, etc.,

IAN G. WICKES.
At Sea. Surg. Lieut., R.N.V.R.

Penicillin for Massively Infected Tissues

SIR,—The following case of subcutaneous gangrene of buttocks complicating a horseshoe ischiorectal abscess may be of interest as a further example of the great part penicillin is playing in the treatment of overwhelming infectious conditions.

A heavily built plethoric man aged 61 was admitted to hospital on May 29, 1945, when he was rather confused, very toxic; temp. 101.6° F., pulse of poor volume, rate 110 per minute. The skin of his buttocks was green and necrotic, surrounded by a wide area of cellulitis, and foul-smelling pus oozed from two large and three smaller sinuses. Both ischiorectal fossae showed signs of abscess formation. The condition had apparently been present 14 days. Cardio-respiratory and other systems were normal for his age.

Under light gas-and-oxygen anaesthesia the ischiorectal fossae were incised and found to be involved in an enormous horseshoe abscess which had discharged under the skin of the buttocks. On incising the skin over the buttocks by joining the sinuses, great lumps of subcutaneous fat, which were green, gangrenous, and stinking, separated to expose the muscles of the buttocks. All this necrotic material was removed, the overlying skin, which was green and gangrenous, was also removed, but as much of it as possible was spared. A specimen of tissue was taken and tested for sensitivity of infecting organism to penicillin. On surveying the site of operation the buttocks presented a horrible stinking mass, glutei exposed, both ischiorectal fossae draining through large incisions, and in the middle a patulous anus. There was no fistula in ano present and the sphincter ani muscles were intact.

The patient was treated with penicillin 10,000 units three-hourly by intramuscular injection, as I did not consider the continuous intramuscular drip method suitable in this case in view of the filthy condition of his buttocks and thighs. In the meantime the causative organism was found to be a non-haemolytic streptococcus sensitive to penicillin. Four-hourly eusol dressings were applied locally, and within 48 hours the temperature was normal. The patient looked better, pulse was firmer, he began to eat, and was quite rational. From then on he never looked back. He remained incontinent of faeces for a month, but by the sixth week was discharged fit and well, the skin having grown in a most amazing manner to cover the buttocks completely.

I have previously been impressed by the remarkable power of regeneration which penicillin therapy confers on massively infected tissues. This was especially marked in the case of a woman with phagedaena vulvae treated conservatively with penicillin only by Mr. Emblin, surgeon to the General Hospital, Halifax, that patient too making a complete recovery with first-class anatomical and cosmetic result.

I wish to thank Mr. Haydon-Baillie, F.R.C.S., medical superintendent, for his advice on this case, and also Dr. Dunlop, who conducted the pathological investigations.—I am, etc.,

R. F. O'SULLIVAN,
R.S.O., County General Hospital, Worksop, Notts.

Aspiration Test in Diagnosis of Breast Tumours

SIR,—Most of us will agree with Mr. M. D. Sheppard (Aug. 18, p. 231) that a diagnostic aspiration is a wise procedure in a doubtful breast tumour. Sometimes such a diagnostic aspiration may cure the cyst, and thus become a therapeutic aspiration. I have two patients who had cysts of the breasts aspirated two and three years ago, without recurrence up to the present time. Further, should a cyst recur after aspiration it is sometimes possible to cure it by a small injection of a sclerosing solution. One has to bear in mind, of course, that such treatment does not cure the underlying chronic mastitis.—I am, etc.,

Rotherham. ERIC COLDREY.

Emergency Treatment of Fractured Femur

SIR,—Vigorous criticism in the absence of direct observation is prone to inaccuracy. However, I was interested to read the remarks of your correspondent, Surg. Lieut. J. S. Joly (Aug. 18, p. 232), regarding an emergency treatment of fractured femur. It is equally probable that a short description will involve omission of details. As your correspondent states, it was possible to diagnose the fracture as being in the region of the greater trochanter. This was done. There was considerable shortening, and although I am not prepared to defend the ice-tong calliper as a form of extension, it is much easier to control than a Thomas splint. Conditions of lack of sepsis did not prevail. Your correspondent infers that an attempt was made to use the calliper with a Thomas splint; in fact, no such experiment was carried out.

The construction of the elevation apparatus is such that flexion of the knee is maintained until after the application of the plaster. The description of the procedure states: "As the application of the cast proceeded the skeletal traction was removed." The fracture was not displaced during the application of the plaster or at any other stage. The board extended from

the patient's head to the level of the second lumbar vertebra. The perineal post is not attached to the board but to a narrow metal plate. The plaster is passed round the metal plate, which is slipped out afterwards. The whole purpose is to ensure continuity of extension so that traction shall be continued right up to and even during the first part of the time taken to apply the plaster.

As the condition of traction remains exactly the same, no displacement can occur and an anaesthetic is quite superfluous. In this case an anaesthetic was contraindicated in view of the patient's age—76 years. The plaster was applied from the level of the second lumbar vertebra to the knee on the affected side, as it was considered that the patient would wish to walk about again, and it was thought worth while to continue active and passive movements at the knee, which had been started two days after the Thomas splint had been removed and continued during the several weeks before the plaster cast was applied.—I am, etc.,

Scarborough. J. NOEL-JACKSON.

Removal of the Wrong Eye

SIR,—In the *Supplement* of Aug. 11 (p. 41) it is reported that Mr. Oswald Hempson made the following statement: "We have cases of forceps being overlooked, and occasionally cases so grave as the removal of the wrong eye. . . ." Mr. Hempson was speaking as a lawyer and his words imply that cases of removal of the "wrong eye" have occurred more than once within his own personal experience, or, at least, that he has definite knowledge of such cases. Would Mr. Hempson or any doctor who has met with a case of this kind be so good as to indicate where it has been reported in medical or legal literature? It is difficult to imagine that such a case could occur without being recorded in print.

It was always my habit when teaching to refer to the impossibility of such a mistake as one of the advantages of the use of local analgesia for the removal of an eye, but the removal of the sound eye was regarded as a hypothetical possibility rather than as an actual fact. I have never heard of a case. Has it ever happened or is it a myth? If it has not happened it is important that the public should not gain the impression from the medical press that it sometimes occurs.—I am, etc.,

Edinburgh. H. M. TRAQUAIR.

Jelly-fish Stings

SIR,—Dr. H. Muir Evans (Aug. 4, p. 165) quotes a description of a case occurring in the Tropics. Having personal experience of this unpleasant bathing incident on our own west coast, I think that a statement of my symptoms may be of interest, for since then I have held the view that many unexplained bathing fatalities in good swimmers may have been caused by this agency.

In 1902, when on holiday at Llandudno, I was beach-bathing; in those days a long diving-board on wheels enabled one to take a running dive into about six feet of water. I made a good dive, but before I had surfaced I felt an intense red-hot pain over the side of my neck and right supraclavicular region. Turning to swim in, the pain spread across my right chest and axilla and down my side and right arm, while I felt as though I were going to faint. By the time I had waded ashore, only a matter of some twenty yards or so, I felt nearly powerless with an agonizing sense of constriction in my chest, and just managed to get to my tent before my legs gave way under me. Though it was 11.30 a.m. on a hot summer morning I felt desperately cold and my teeth began to chatter. I looked so bad that my friends rushed to get brandy (procurable in those days!) and a doctor. Mercifully the former was quickly forthcoming, and its effect was to relieve to a great extent the feeling of respiratory distress, so that I was able to slip on some clothes and get the few hundred yards to my hotel, where I went to bed.

By this time the affected area of the skin was swollen and red with a few weals on my face and neck and below my deltoid, while the burning pain was intense. I experienced severe colicky pains and felt as though I were going to have diarrhoea and sickness. No doctor being forthcoming I prescribed another hot brandy and water, while my friend went to a local chemist for a lotion to soothe the skin. This was most efficacious, and the soporific effect of the unaccustomed brandy worked so that I slept till tea-time. On waking I still felt extremely weak, but could breathe without difficulty, all abdominal discomfort had disappeared, and I was quite ready for a wholesome tea with an egg. The friendly chemist, when issuing a further supply of the lotion, advised and handed out a rhubarb pill! I slept all night and woke feeling more or less fit, except for an intense irritation of the affected area of skin, which was still pink and had a few petechiae below the axilla on arm and side. This completely disappeared in two days, but I had a mild desquamation of the petechial area.

The interesting point is the extreme rapidity with which the poison produces such profound shock, for I was 18 at the time and as physically fit as it was possible to be; nevertheless I feel sure that had I been in deep water any distance from the shore I could not have made it without assistance. True, I gave myself a good dose of the poison by squeezing the jelly-fish between my arm and side, but this could happen to anyone doing an over-arm stroke. The jelly-fish was of the "frayed rope-end" type (*Medusa charybdiaedae*, I believe), and visitors to the coast, particularly in the west, will know that on some days the sea is alive with them, as they appear to drift in with certain winds on warm currents. They are bathing companions to be given a wide berth.—I am, etc.,

Amersham. H. J. HENDERSON.

Weight Reduction by Dieting

SIR,—I was interested in your correspondent "Apollonian's" starvation diet (July 28, p. 136), but feel that he might have achieved his object almost as rapidly and more advantageously without starvation. I have been able to achieve similar results while continuing to eat, in peacetime, as many full and hearty meals as I wished, and even in wartime, without starving, by the simple expedient of strictly removing all fat and all carbohydrate from the diet. No vitamins or alkalis are taken. This is a comparatively easy procedure, and still leaves a number of purely protein and cellular foods from which even nowadays quite useful and sometimes hearty meals can be prepared. I have tried it successfully on myself, and although after nearly six years in the R.A.M.C. I cannot aspire to any great interest in a view of male genitalia from whatever angle, I was nevertheless able to record a reduction in weight 85% as good as "Apollonian's" over a comparable period—with the additional satisfaction of being reasonably certain that little or none of this loss was at the expense of my muscles or other body proteins.

Considerably greater reductions were produced in grossly overweight patients, who lost in one case 14 lb. and in another 18 lb. in the first week. I have not yet failed to obtain a minimum loss of 5 lb. weekly in anyone adhering rigidly to this diet, and neither I nor my patients have suffered any ill effects from it.—I am, etc.,

London, N.W.1. A. LEWIS.

Chemically Induced Convulsion Therapy

SIR,—In convulsion therapy drugs have been very largely superseded by the electrical method of inducing the fits. This is because, as Brain and Strauss have pointed out, E.C.T. is inexpensive, simpler, and a relatively safe method. Moreover, it is quicker, easier to perform, and does not spoil the veins. Whereas for many reasons it is desirous to use the electric method of induction, we believe it would be a mistake if the special advantages to be gained by the use of the injections were neglected. In actual fact experience shows that there are differences between electrical and phrenazol fits, as seen by the type of convulsions, the associated changes, and their clinical application.

The phrenazol fit begins with a slight pallor, dilatation of the pupils, and a cough; then the fit sets in with opisthotonos followed by clonus. During the short asphyxial period the eyes are often deviated upwards and the gag is held tightly between the teeth. Then deep breathing starts, the gag is released, and recovery of consciousness occurs. Generally there is an unpleasant memory of the preconvulsive period, with the result that patients frequently dread the treatment. The course of the electrical fit is, however, a shorter one. The onset of the convulsion is instantaneous; it does not start with opisthotonos, but in 70% of a series of our cases with a flexion of both legs at the hips and knee-joints, accompanied infrequently with a flexion of the elevated arms at the elbows, the flexion of both legs going slowly over to an opisthotonos which is then followed by clonus. The asphyxial period lasts longer, the eyes often being deviated sideways, as was observed by Kino, and while consciousness is clouded there are frequently sucking movements of the lips present, even if the gag is artificially removed from the mouth.

The patient has an amnesia for the treatment and consequently the fear is less.

Guttman and Reitman showed that after cardiazol (phrenazol) convulsions the blood pressure rises quickly to above the resting level and returns very slowly. Dax found similar changes with ammonium chloride. In a series of electrical convulsions the same changes were not found, for after the blood pressure became registrable it rose, but not to the same degree as with phrenazol, and it returned more rapidly to the resting level. At first it was thought that the fear and apprehension for phrenazol convulsions played a part in the results, but this was later disproved by Cook. It seems, however, that the general tendency is to emphasize the psychological significance of the *pre*-convulsive "aura" in phrenazol and the *post*-convulsive psychomotor dramatization in E.C.T. Furthermore, in our experience lasting memory disturbances are more marked after E.C.T. than after phrenazol.

Carse and Frank emphasized that patients refusing food showed a better therapeutic response to phrenazol than to E.C.T. In accordance with these observations previous workers had noticed that patients put on weight after chemically induced convulsions, but it was suggested by others that this was the result of the mental improvement. We have also found in accordance with Carse's observations that patients refusing food respond better to phrenazol and gain in weight. In comparison similar cases receiving E.C.T. respond only slowly to the treatment and the ultimate gain of weight averages less than with phrenazol. Based on these experiences, in case of constant food refusal we administer as a routine phrenazol shocks for 3 to 4 consecutive days in preference to E.C.T. We also believe that phrenazol can be used to advantage in cases of stupor, in simple schizophrenics with vasomotor disturbances, and in breaking up a state of mania. Based on these experiences, of a total of 849 patients who received convulsion therapy in 1944 at Netherne, 69 had their convulsions produced by chemical means, the remainder receiving electrically induced fits.

The practical conclusion of these observations and investigations seems to be that while E.C.T. in most cases remains the method of choice for convulsive treatment, chemically induced fits still have a useful field of application. Further clinical research might usefully be directed towards investigating the therapeutic differences rather than the similarities of these methods of treatment.—We are, etc.,

E. CUNNINGHAM DAX.
F. REITMAN.

Netherne Hospital, Couldson, Surrey.

Milk Still Unsafe

SIR,—May I be permitted to offer my congratulations on your leading article (Aug. 4, p. 160) under the above heading. The Joint Tuberculosis Council has for many months been making every endeavour to secure some improvement in the present unsatisfactory state of affairs. Resolutions have been forwarded to the Ministry of Health and other interested bodies, attempts have been made to get the medical Members of Parliament to take action; numerous interviews have been arranged, etc., but beyond being told that we were "flogging a willing horse" nothing has been achieved.

The medical profession has a grave responsibility in this matter. Until we so rouse public opinion that Parliament has no option but to pass the necessary legislation we must ourselves accept some share of the responsibility for our 2,000 deaths per annum as the result of bovine tuberculosis. We have the opportunity of stimulating public opinion by impressing upon all our patients the danger of drinking milk which has not been either pasteurized or boiled, and I would suggest that every doctor, whether in private practice or holding a public appointment, should do all he can in this respect.—I am, etc.,

A. P. FORD.

Welwyn.

SIR,—I fail to find in your leading article on "Milk Still Unsafe" (Aug. 4, p. 160) any attempt to deal with the matter from a fundamental point of view. As you are aware, 50% of the milking cows give evidence of tuberculosis. You will, I take it, agree that this is the case because the vitality of the cows is so low that their cells are unable to tackle and destroy the tuberculosis in their bodies.

Why is their vitality so low? First, because of wrong food. If the land is not properly fed one cannot expect good grass to grow and contain the lime necessary for giving a satisfactory supply of this mineral. In 1934, in an address to the Carmarthen Chamber of Agriculture, I advocated a Government subsidy to farmers for buying lime, and in a short time this subsidy was forthcoming. Now that the subsidy has been stopped many lime kilns have ceased to function and the land is starved. Secondly, the calves have so bad a start in life that they fail to develop into healthy heifers. The calves are not given their adequate supply of good fresh milk, while those whose mothers give evidence of tuberculosis get milk of an inferior quality and are made all the more liable to fall a prey to tuberculosis. Thirdly, the cows are stimulated to develop abnormally huge udders in order to yield more and more milk, thereby draining them of a vitality which otherwise would keep off the attacks of the tubercle bacillus. Abnormally large udders are in themselves evidence of a departure from good normal health, and the various competitions for high registered averages are as wicked as they are insane.

You write of pasteurized milk as if it were all of the same quality, notwithstanding your reference to the American Army regulation that soldiers must have only pasteurized milk from tuberculin-tested cows. It is well for all your readers to realize fully that pasteurization of milk from Tb cows cannot possibly make that milk an A1 milk even on the first day, while the rapid deterioration of milk which has been pasteurized makes it on the second day of no value at all.—I am, etc.,

G. ARBOUR STEPHENS.

Swansea.

*** We do not know what an A1 milk is, but we do know that a milk containing tubercle bacilli is rendered safe by pasteurization—witness Price's observations at Toronto. The deterioration in keeping quality of pasteurized milk on the second day is, of course, less than in the same milk untreated; every dairyman knows this. And if by "no value at all" the writer means nutritive value then the statement is simply untrue.—ED., *B.M.J.*

Tuberculous Persons in Prisons

SIR,—The letter of "C.438" (Aug. 18, p. 242) caught my eye and I referred back to the letter of Dr. Audrey Roberts (July 21, p. 100). Does Dr. Roberts not consider she is making libellous statements about a body of well-qualified men and women who devote their lives to improving a somewhat difficult and dissatisfied section of the community—namely, the prison medical service? Does Dr. Roberts know that each large prison carries two or more full-time medical officers, that smaller prisons carry one medical officer (full-time), and that still smaller prisons have medical officers who visit daily?

I retired from the prison medical service after long service in 1939. At my prison we had a number of special cells, facing south, with walls rendered smooth and all angles rounded off, the whole of the walls and ceiling being painted with enamel. They were provided with bedsteads, hard-wood furniture, and chairs with backs; they also had specially large windows and impervious floors. These were for prisoners (tuberculous) who did not require hospital treatment. Prisoners occupying these were employed outdoors all day at light garden work, and were examined once a week and weighed by the medical officer. The more serious cases were treated in bed in hospital rooms with large windows. In my experience tuberculosis is not common among prisoners, and I recollect only three serious cases in 30 years. One was of a man who had been treated in the Isle of Wight and was merely lodged in my prison on his way home to Yorkshire; the journey, unfortunately, proved too much for him. (This was the only patient with tuberculosis who died under my care.) The second was a case of acute pneumonic phthisis; the patient was released in a day or two to a suitable institution, where everything possible was done for him. The third was a case of tuberculous peritonitis, which was operated upon at a general hospital, and a bad prognosis given. The patient was kept on a mattress with suitable protection all the days of a long fine summer; he completely recovered and was last heard of serving a sentence of penal servitude.

Various statements in "C.438's" letter are, I believe, inaccurate—e.g., sanitary conditions are not primitive; there is ample accommodation for attending to the calls of nature in the morning. At the prison where I was, any prisoner who

wished to leave his cell to empty any obnoxious matter was allowed to do so up to 10 p.m. on ringing his bell. New entrants should have a new mattress and clean blankets on admission. Prisoners were allowed one hour's exercise, not half an hour. Fruit had not been added to the menu when I left, but the food was good and more than adequate, with such variety as was obtainable (carrots, turnips, and onions were often served).—I am, etc.,

York. F. J. WILFRID SASS.

Weights and Measures

SIR,—The trickle of unsolicited papers and pamphlets describing medicinal and food preparations is already arriving, and may by-and-by become a flood. Before this happens—for we sometimes read them—may I draw attention to the exclusive preference being shown in these to the metric system of measuring dosage, with the ignoring of the Imperial system? In a number of recent instances metric figures alone have been given.

Those of us—and they constitute the great majority—who have been educated in the use chiefly of the English scale continue to believe it good enough and exact enough for all practical purposes; and we feel that English equivalents, which are being quietly dropped, ought to be reinstated as alternatives; indeed, should be given pride of first place. Why prefer the foreign system when we know our own time-honoured English scale of measurements to be reliable and perfectly serviceable in clinical use? The metric system is a recognized laboratory necessity, not to be forced upon the British prescriber or dispenser. In ordering drugs most practitioners adhere to the old English scale, and will continue to do so in spite of much argument against, and in favour of the metric system, which is too fine-drawn for bedside use and only encourages the ready-made to the detriment of prescription writing.

The Imperial scale should be rehabilitated; in default of this being done the waste-paper basket is again likely to find one of its proper uses.—I am, etc.,

Bournemouth. S. WATSON-SMITH.

Doctors and the Social Trend

SIR,—If the people of this country had not opposed the "social trend" in Europe in 1939 we would not enjoy to-day the little freedom we have preserved. Representative bodies of medical men have consistently expressed their conviction that State control of medicine would not be in the interests of the public, medical progress, or the doctors themselves. Shall we now recant against our better judgment because of an election held in an atmosphere of mass hysteria due to reactions after a long war? Many people gave me their reasons for voting Socialist: in most cases it was a blind loyalty to the Labour Party by workers and trade unionists or else a desire for a change at all costs, a result of war-weariness; some for the most illogical and absurd reasons—for example, "Churchill is a warmonger" or "The fat ration is too low." I have, however, yet to meet one person who voted Socialist because he wanted a State medical service. The public are just not interested in it and any agitation for it is purely political.

I know there are a great number of doctors like Dr. Shackleton Bailey (Aug. 18, p. 235) who think a State medical service is bound to come, and for that reason I think we should get down to brass tacks and state the minimum terms that would be acceptable, so that Mr. Bevan may have no illusions. I have gone into this question with various sections of the community, and there is a remarkable unanimity of opinion as to the terms under which a general practitioner of some years' standing might accept State service. Briefly they are: compensation for practice, salary of £1,250 per annum with travelling expenses, pension of £500 at 65, adequate holidays and time for refresher courses. Is the Government in a position to offer us these terms? I very much doubt it. Even if it is, I think we ought still to insist that any doctor who wishes to maintain his freedom and not take part in the service and any patient who wishes to contract out for his treatment should be free to do so without victimization.

The defeatism of Dr. Bailey and many other doctors is quite unwarranted. The medical profession is in an unassailable position, and with a little courage and unity need never be dictated to. Just think for a moment if the miners or the dockers were in our position how they would fight the Government! Besides, we have the heartening example of our colleagues in Australia and New Zealand.

We must expect many attacks now from a section of the Press and the politicians, but when Mr. Aneurin Bevan goes into the matter he will find, as Sir Stafford Cripps did in the case of the cotton industry, it is no easy thing to nationalize medicine. A Bill rushed through the Houses of Parliament could not produce the extra doctors or nurses, nor could it provide additional hospital accommodation—all of which are essential if chaos is to be avoided. I think Mr. Bevan will soon see that the ambitious State medical service which his party has been promoting would require at least ten or fifteen years to materialize, assuming, of course, that our depleted finances can stand it.—I am, etc.,

London, S.E.1. W. B. PEMBERTON.

SIR,—Surely Dr. Shackleton Bailey (Aug. 18, p. 235) as a good Conservative is not going to haul down his colours after one defeat. The fact is that we have a Labour Government for a longer or shorter period of office which is determined to nationalize at least, and possibly socialize, medicine. But Parliaments come and go and cease to have responsibility for that which they have done, but we, as a profession, remain, and do not cease to be responsible for the advice we give to our fellows and our juniors and for the legacy we leave to our successors. That is why a change of Government should not make any change at all in our views as to what is right for our ancient and noble profession.

Doctors are on the whole poor politicians, which seems a good thing, and our decisions are almost entirely free of political considerations and formulated on a fairly clear idea of what is right for our profession and posterity. The latter is the whole crux of the matter. Governments legislate for the immediate future; we must see that that legislation is also the right one for our successors. That responsibility is ours just as certainly as night follows day, and no thinking doctor will deny it. Dr. Shackleton Bailey states that the medical profession can no longer defy a force that has swept Mr. Churchill aside. The answer is that Mr. Churchill has not been swept very far aside, and the medical profession, if united, can defy anything of which it does not approve.

Our leaders realize that in a democracy Governments do not get all their own way. The best results are achieved by the stimulation of a healthy, energetic, and honest opposition.—I am, etc.,

Glasgow. KATE HARROWER.

SIR,—Dr. Shackleton Bailey draws attention to the trend of things with us—in fact the bloodless and silent revolution of our social structure that is being enacted at this very time. Yet, surely, most of us have been alive to these facts for years, and many of us have not ignored them in our various writings from time to time. Nevertheless Dr. Bailey, in common with many others, assumes that General Elections are apt to convey the impression to the innocent that a change of Minister means all is lost and all must be changed. True such a change has brought in new names with doubtless new energy, but it should be kept in mind that it is the workers of all grades who must avert our and their own approaching nudity. If any deluded supporters of the Left remain who imagined that Mr. Attlee when in charge was some form of modern Aladdin who has only to rub his lamp and produce the promised land of milk and honey, clothing, motor cars, and stockings at once, then they have already been warned by Mr. Attlee himself.

Mr. Churchill, "the greatest hero in the hour of his triumph over our enemies," has not been swept aside, as Dr. Bailey most wrongfully suggests. Mr. Churchill's party and policy may be temporarily out of favour as a result of its moderation and precaution in socialistic reforms, preferring to promise something it was sure it could carry out rather than commit itself to a policy of questionable politics. Mr. Churchill's achievements are already part of history. The world speaks justly his high praise, and this needs no further repetition. "The Government may have the votes in the House of Commons, but the Opposition most certainly has the voice. Its voice is that incomparable orator and debater, Winston Churchill."

On the demeanour and manner in which Mr. Aneurin Bevan, ex-miner and now Minister of Health, conducts his affairs in

the future will largely depend the continuance or fall of the present Government. Our Minister of Health has uttered few words in his new official capacity, far less outlined his proposed policy for the future of the medical profession, and it does seem unfortunate that Dr. Bailey should choose this juncture to assume the role of prophet, or endeavour to interpret what he thinks Mr. Bevan is likely to propose for the profession, and goes further by suggesting we should accept something before we have even heard the details. It is just possible that Mr. Bevan—not perhaps such a "vehement critic" as he is reputed to be—may yet surprise many of us in his understanding, reasonableness, and soundness of the requests he may place before the profession.

Most of us are aware of the Labour Party's proposals for a *National Service for Health* as published over a year ago (price 2d.) and how only a full-time salaried service would appear to appease that appetite. Yet many of the proposals in this booklet strike notes of common sense, and the doctors, in my opinion, have never desired to oppose the wishes of the public, as Dr. Bailey tends to imply, but in fact have always placed the welfare of the patient in the forefront. They remember that poverty is perhaps still the greatest single cause of ill-health, and that good conditions of work, with full employment and ample opportunity for leisure and exercise, well-built and well-planned homes, plentiful supplies of milk and nourishing food, with sunlight and absence from injurious noises, are much more likely to achieve better health of the nation than good doctoring by itself.

It seems, therefore, essential that those who are entrusted by us to negotiate the future basis of employment of our profession with the elected representatives of the nation should exert all possible influences on the Government of the day to listen to the experience and advice of professional men who have spent their lives studying and advising the sick in their best interests. Our representatives should bear in mind the experience and opinions of those who have served in whole-time salaried medical services such as the Forces (*Journal*, 1944, **1**, 732), and also in the municipal medical services. Already in this country there are "2,000 public hospitals and some 1,000 so-called 'voluntary' hospitals of various types." Examine the numbers of attendances of these two groups throughout the country, and from the result it would appear that an overwhelming majority favour the voluntary hospitals' treatment. Nevertheless, the Government will doubtless ask for, in fact demand, a full-time salaried service, and those who desire it must have it. But let us also legislate for a part-time salaried service, incorporating with it the right of private practice, and so safeguard the interests of the public so that in the event of the full-time service failing (as it has to a large measure in Russia) then we have the alternative part-time National Health Service already in operation to maintain the interests and health of the nation.—I am, etc.,

London, W.1. NORMAN P. HENDERSON.

SIR,—Dr. Bailey's letter should appeal to most members of our profession. There is one point, however, which he might have mentioned. The country and the Government regrettably seem determined to regard the medical profession of the future as a "trade." All trades are protected by their respective trade unions. If we have to consider our profession from the trade point of view with the public represented by the Government as our employer, then our urgent need is for an adequate machinery to prevent our exploitation. This should exist in our British Medical Association.

The vast majority of doctors are not mercenary-minded, but it is quite reasonable for an individual who has perfected himself in a trade which demands high skill to expect both an adequate financial reward and working conditions which enable him to do himself and his patient justice. The Government now in power is reasonably determined to obtain adequate medical attention for every member of the community, but doctors would like to be assured that the means taken to achieve this creditable end are adequate and agreeable not only to the medical man but also to the patient—a process which will take many years to perfect.—I am, etc.,

Eton. JOHN WEBB.

Belsen Camp

SIR,—On my return a few days ago my attention was drawn to a letter from Major F. R. Waldron, R.A.M.C., pointing out certain omissions in my article on Belsen of June 9 (p. 814). I am very glad that he has done so and added the names of the Army units in question, and enlarged upon the work of the Field Hygiene Section of the 11th Armoured Division, who were in the camp before anybody else, when the S.S. were still actually in charge. No praise is too high for them. I am exceedingly sorry that they obtained less than their due. This, however, was not my fault. I was requested to write the article objectively as an observer. I was not in the camp as a worker until later on. I discussed the article with Lieut.-Col. Johnston, the S.M.O., and wrote it partly in his tent. At that time there was a great lack of nursing personnel and Johnston was against handing the people over to German nurses. The article was written with the object of rousing public opinion and getting the release of nurses from home. I asked Johnston to sign the article himself. He did not like to do this, and he did not want any names of individuals or units mentioned, as he felt all had worked so hard that it would be unfair to pick out individuals. An article was then composed and referred to the necessary high command. The latter had already decided on a different policy and hence cut out certain parts of the original article. At the same time they said that the work done by the Army units in the early horror days was so outstanding that they felt these units should be mentioned by name and added the list themselves.

As a matter of detail, it was not stated in my article when the camp was first entered. If Major Waldron looks at the article again he will see that the date April 17 is given by the S.M.O. as the date when *he* first entered the camp and not the date it was first entered.—I am, etc.,

Dublin. W. R. F. COLLIS.

The Training of the General Practitioner

SIR,—I should like heartily to endorse Dr. J. Macleod's letter (July 28, p. 135) on the above subject and also to agree in the main with the suggestions contained in Dr. Frank Gray's article (*Supplement*, May 27, 1944, p. 121). I well remember Dr. Harvey Cushing's remarks in his address to the International Conference in London in 1913, or thereabouts. He then gave it as his opinion that no doctor should be allowed to specialize until he had spent 10 years (I think it was) in general practice (or words to that effect), and I certainly think that that would be a good rule to go by, for the sake of both the public and the profession generally. Otherwise many specialists trained from their youth up in their one line and mostly in hospitals remain narrow in outlook and poor in diagnostic acumen.

Failing such general training a useful substitute would be for specialists to undergo refresher courses in general practice at suitable intervals. Such courses would, I feel sure, broaden their outlook, temper their judgment, and improve their relations with the G.P.s. As Dr. Macleod says, the medical schools are turning out embryo specialists, who, incidentally, seem to consider themselves already in the ranks of the adults and are very apt to "talk down" to the "ignorant G.P." If it could be arranged lectures and ward teaching in medicine and surgery by a good G.P. in every medical school would greatly help in fitting the new graduate for his life's work and getting his mind off rare cases and advanced conditions.

As regards the budding G.P., the young graduate is not only permitted to engage in independent private practice as soon as he is registered but he is also, be he ever so poorly qualified, permitted to purchase the practice of a good G.P., and may be taken on as a presumably worthy successor by a trustful clientele at whose expense he proceeds to learn his job. This is certainly a defect in our present system. Whether he intends to take up general practice or later to become a specialist, it should be obligatory on a young graduate to spend at least two or three years as assistant to an experienced G.P., and on taking up independent practice it should also be obligatory to put his qualifications on his door plate and not be allowed to masquerade as a well-qualified medical man under the simple title "Dr." to which he may not be entitled.

A high-standard diploma in general practice should raise the prestige of the G.P. *vis-à-vis* the specialist. The word "specialist" is exploited *ad nauseam* in professions and trades, and in the public mind suggests a high grade of knowledge and skill and also, unfortunately, a sort of infallibility, all of which are often lacking. It is a pity it cannot be scrapped. With the raising of the standard of general practice which such a diploma might be expected to bring about we should perhaps hear less often such remarks as, "He's only a G.P. of course," and the still more disparaging one, "But then he's only a panel doctor"! Having had some experience of both forms of medical activity I agree with Dr. Macleod in thinking that efficient general practice is of greater value to the public and more difficult to carry out than any specialism, and, incidentally, it should, in my opinion, be able to command at least as high a remuneration.—I am, etc.,

C. H. BARBER,
Lieut.-Col., I.M.S. (ret.).

Thame.

Obituary

WILLIAM CRAMER, D.Sc., PH.D., M.R.C.S.

News has reached this country of the death at Denver, Colorado, on Aug. 10 of Dr. William Cramer, who was for 25 years pathologist on the staff of the Imperial Cancer Research Fund and in 1939 crossed the Atlantic to take up the posts of cancer research associate at the Barnard Skin and Cancer Hospital, St. Louis, Missouri, and research associate in the anatomy department of Washington University.

William Cramer was born on June 2, 1878, and received his education at the Universities of Munich, Berlin, and Edinburgh, and at University College Hospital, London. He graduated Ph.D. of Berlin in 1901, D.Sc. of Edinburgh in 1908, and took the English Conjoint qualifications after nine years as lecturer in chemical physiology at Edinburgh University. Before then he had worked for a short time under the Imperial Cancer Research Fund, whose scientific staff he rejoined in 1914. He was elected a Foreign Member of the German Society for the Investigation of Cancer and a member of the Leeuvenhoek Vereeniging. In 1933 he went as official delegate of the British Government to the International Cancer Congress in Madrid, and a year later attended the International Cancer Research conference in Paris as British delegate. At the Skin and Cancer Hospital at St. Louis he was promoted to be head pathologist, and in 1941 gave the Middleton Goldsmith lecture before the New York Pathological Society.

With a wide knowledge of his subject and its literature, Cramer served for some years as sectional editor of the *Cancer Review* and as editor of the *Acta* of the Union Internationale contre le Cancer. He wrote numerous papers published in the reports of the Imperial Cancer Research Fund and in scientific journals on cancer, physiology, biochemistry, and nutrition. His book for students, *Practical Course in Chemical Physiology*, reached a fourth edition in 1920 and his monograph, *Fever, Heat Regulation, Climate, and the Thyroid Adrenal Apparatus*, appeared in 1928. He was a member of the Physiological Society, the Pathological Society of Great Britain, and the Biochemical Society.

By the death on Victory Day of Dr. ALEXANDER BROWN, of Bartholomew Road, N.W., a wide circle has suffered an irreparable loss. He had been a member of the B.M.A. since 1908. He held office as honorary secretary and treasurer of the St. Pancras and Islington Division from 1910 to 1913; was vice-chairman of the Division from 1913 to 1916; chairman in 1916–17; and he represented the Division at the Liverpool Annual Meeting in 1912. Son of Andrew Brown, M.D., he was a King's College man, where in 1894 he gained the Rabbeth Scholarship and the Sambrooke Exhibition. He gained the senior medical scholarship in 1898, in which year he qualified. He practised in the house in which he was born, where the family practice was maintained for nearly 100 years, and he was only persuaded to leave when enemy action had rendered the house a total loss. By good fortune he and his family escaped from the ruins unharmed. He served as a regimental medical officer in France during the 1914–18 war, and often remarked that such is the effect of war on one's contemporaries that he went to the war as "the young doctor" but returned as "the old doctor." Alexander Brown possessed a strong personality with great personal charm—a beloved physician, a true mirror of Oliver Wendell Holmes's lines. As a family doctor he served all classes of his community, and resisted alike the rush of contract practice and the attractions of an exclusive West End clientele. In the difficult sphere of family practice he maintained to a high degree a keen scientific outlook, combined with such a kindly interest in, and consideration for, others as endeared him to all. Quick to perceive the patient's often unexpressed feelings, he easily identified himself with their problems and spared neither time nor effort in their solution. With his accurate observations carefully noted, a consultation with him was both a pleasure and an instruction. It is no faint praise to say that he was in every sense a true family doctor, rich in those qualities which cannot be taught. Medicine owes its stature to the work and example of men like this. While showing selfless devotion in his practice, as a man he shrank from publicity, or even from obtaining his rights if influence were the key. His last illness, in full knowledge of the outcome, was borne with a quiet and characteristic courage. He leaves a wife and two daughters. Many will join them in feeling a very personal loss.—K. H.

Surgeon Commander JOHN DAVIES, who died at his home on Aug. 2 at the early age of 43, was one of the best-known practitioners in Hampstead. He had a distinguished academic record at the Westminster Hospital, qualifying as M.R.C.S., L.R.C.P. in 1924 and taking the degree of M.B., B.S.Lond. in 1928, and the M.D. and M.R.C.P. in 1932. He filled the appointments of house-physician, house-surgeon, and resident medical officer at Westminster Hospital, and that of clinical assistant at the Royal Chest and Royal Ear Hospitals. He settled in practice at Hampstead in 1932 and soon became well known both in medical and in lay circles. He was one of the public vaccinators for the Metropolitan Borough of Hampstead and a member of the Hampstead Rotary Club. He joined the B.M.A. in 1926 and took an active part in the work of the Hampstead Division, being its Representative at the Annual Meeting at Plymouth in 1938 and being appointed chairman in 1939. Soon after the outbreak of war he joined the R.N.V.R., and for two years was posted to the Royal Naval Hospital at Plymouth, where he acted as neuropsychiatric specialist. He was transferred to the Middle East, serving in the same capacity at the 64th General Hospital for two years. There, however, his health deteriorated, and he returned to this country, but continued to serve at the Royal Naval Hospital, Kingseat, Aberdeen, until shortly before his death. The following tribute came from D. B. K. and H. D. L.: In the death of Surg. Cmdr. J. Davies, R.N.V.R., the Royal Naval Medical Service has lost a fine doctor, and we, his shipmates, a beloved colleague and friend. Jackie was a man of boundless energy and drive, which was often the envy of younger and more staid medical officers. Well versed in all branches of medicine, he was chiefly interested in neurology. To this work he brought a sound insight into human nature and a whimsical individual touch. It was while acting as neuropsychiatric specialist in Alexandria that he formulated his famous "Ferdinand" syndrome—applied to those patients in the Forces who, like Disney's bull, did not want to fight but preferred to sit in the fields and pick flowers. But happiest memories of him are apart from work—around the wardroom fire, or in his own charming home—a grand host and a warm-hearted and generous colleague. His many kindnesses were proverbial, but were always performed with so much tact and humour that only those who knew him most closely were aware of the deep and serious strain of compassion in his nature. Jackie never lost the "innocence of anger and surprise" when confronted with a case of injustice, and he would work quietly but fiercely and unsparingly until it was righted. Despite the fact that for months he must have realized the gravity of his illness, he insisted on carrying on until he collapsed. His passing will leave a gap in the hearts of many in the Navy all over the world. To his widow, son, and daughter we extend our deepest sympathy in their great loss.

The following well-known medical men have died abroad: Dr. LUTHER REICHELDERFER, formerly clinical professor of surgery at the Columbia University Medical Department, aged 71; Dr. MARIANO ALURRALDE, ex-professor of clinical neurology at Buenos Aires and ex-president of the Argentine Medical Association, aged 81; Dr. CARLOS BRITO FORESTI, professor of clinical medicine of the Buenos Aires Faculty of Medicine, aged 65; and Dr. MANOEL FRANCISO DE AZEVID jun., formerly president of the Society of Medicine and Surgery of Rio de Janeiro, aged 79.

Medical Notes in Parliament

Dr. Haden Guest has been appointed chairman of the Medical Personnel (Priority) Committee.

A Labour Medical Committee has been formed at the House of Commons with Mr. Somerville Hastings as chairman and Dr. Haden Guest as honorary secretary.

A meeting to discuss the re-establishment of the All-Party Parliamentary Medical Group will probably be held after Parliament has reassembled in October.

New Government and Health Service Proposals

Sir HENRY MORRIS-JONES on Aug. 23 asked the Minister of Health whether he had yet made any arrangements for discussion with the medical profession, the voluntary hospitals, and the local authorities on the Government's proposals for a National Health Service. Mr. BEVAN replied that he had not done so. The Secretary of State for Scotland and he had the whole question at present under review.

Mr. Willink's Statement

During the debate on the Address on Aug. 21 Mr. WILLINK referred to the release of doctors from the Services and hoped that now the war was over the Government would see that the supply of doctors at home was rapidly increased. Turning to the plans for the National Health Service, Mr. Willink said he was disturbed by the statement, made by Mr. Greenwood on Aug. 17, that it was necessary to go back to the position of March, 1944, and to start afresh the discussions contemplated by the White Paper. Mr. Willink said he had always contemplated that legislation should be introduced this year and that the comprehensive health scheme should come into force with or before the general insurance plan. Young doctors, particularly those returning from the Services, should know as soon as possible what forms of professional work were going to be open to them. Planning of hospital resources was urgent, but until there was legislation both voluntary and municipal hospitals would be in difficulty about their future function and development. Mr. Greenwood had made inaccurate and misleading observations about the course of events since March, 1944, and had said that Mr. Willink reopened, behind the backs of everybody else, secret discussions with the British Medical Association. Mr. Greenwood had said the result was a muddle causing great and unnecessary delay. Mr. Willink wondered whether that was put forward as an excuse for delay by the Government. He explained that, at an early date after the Parliamentary debate on the White Paper, discussions expressly contemplated by Parliament had been opened by him and Mr. Johnston. These were not primarily with the British Medical Association. They were with voluntary hospitals, local authorities, and with a body representative of the whole medical profession—the Royal Colleges, the medical officers of health, and the general practitioners. B.M.A. representatives made up about half of one of the three bodies with which Mr. Willink, in conjunction with Mr. Johnston, had discussions. There were other discussions with chemists, dentists, and other bodies. The local authorities much disliked the proposal to transfer their hospitals to Joint Boards.

Mr. BEVAN intervened and warned Mr. Willink that if he was going to tell the House of these negotiations, then Mr. Bevan at some other stage would complete the picture.

Mr. WILLINK said he was in a stronger position to describe what passed than was Mr. Bevan, who had not been present. Mr. Willink reported that both the voluntary hospitals and the medical profession claimed a fuller share in the planning of the future hospital and other services than was accorded in the White Paper. The voluntary hospitals also strongly objected to receiving direct aid from local rates. The best lay and medical opinion agreed that the White Paper scheme gave no adequate place to the influence which universities with medical schools should be able to exert on the planning and development of the hospital and health services. The voluntary hospitals and the doctors were apprehensive about local authority control of their work. The general practitioners were among many who strongly objected to the powers which the White Paper proposed should be entrusted to a Central Medical Board. All these contentions were serious matters proper for discussion. Those who came to discuss them, though critical, were most helpful. In the result by the end of May he and they had reached a stage where, without the loss of a single service contemplated by the White Paper and without a thought of abandoning a wide trial of health centres of various kinds, a structure had emerged likely to command such agreement that it was possible to begin and to make considerable progress with drafting the necessary legislation. There was no muddle whatever. He hoped the Government would not decide that the work and effort given by those most skilled in these matters should be treated as nugatory. There ought not to be an excess of Party politics in the health services of the nation.

Sir HENRY MORRIS-JONES warned the Government that if it ignored the great medical profession and its traditions of freedom they would get resolute opposition, comma by comma, and line by line, from the Opposition side of the House to any National Health Service which obliterated the principle of the private patient having access to his doctor. If the Government intended to make the profession of medicine a State-salaried Civil Service it would be up against the biggest fight it had ever tackled. He was sure he expressed the view of 95% of the medical profession. The conference of the medical profession had, last summer, voted by 93% against some of the proposals which the then Minister of Health brought before them on behalf of the Government.

Mr. HERBERT MORRISON said the Government would go ahead with an effective social security programme. There was more in the social services than feeding the hungry or bringing the doctor to the sick.

Committee on Atomic Energy

Mr. ATTLEE announced on Aug. 21 that to assist them in dealing with the questions raised by the new discoveries respecting atomic energy and its further development in this country for industrial or military purposes the Government had decided to appoint an advisory committee under the chairmanship of Sir John Anderson. On Aug. 23 Mr. Attlee added that research on the possible use of atomic energy would continue to be carried on under the Tube Alloys Directorate of the Department of Scientific and Industrial Research.

Ratio of Doctors to Civilian Population

Mr. BEVAN told Sir John Mellor on Aug. 23 that the average number of civilians per general practitioner in the United Kingdom was 2,576. The corresponding number in relation to medical practitioners of all kinds was 1,359. The number of Army personnel per medical officer in the B.L.A. was about 409, but these officers had considerable additional commitments to displaced persons and others.

Protection of Practices Scheme

Sir E. GRAHAM-LITTLE asked on Aug. 17 whether Mr. Bevan knew that the B.M.A.'s scheme for the protection of absentee practitioners' practices forbade other doctors from attending a demobilized doctor's patients for a period of twelve months after the close of hostilities, "thereby depriving insured persons on his list of their right to a free choice of doctor for that period; and, as this constituted a violation of the National Insurance Act, if he would take remedial action." Mr. BEVAN replied that he was in consultation with the B.M.A. on the subject.

Release of Doctors

Mr. LAWSON said on Aug. 24 that release of doctors from the Army was being accelerated in accordance with the quicker release of the Army as a whole. Delay in the release of categories of specialists would occur owing to the existing shortage and difficulty in finding replacements in these categories.

Medical News

Sir William Douglas has been appointed to succeed Sir John Maude as Permanent Secretary of the Ministry of Health and will take up his new duties in September. He entered the Civil Service in 1914, was assistant secretary and then Secretary of the Department of Health for Scotland in 1935–9, and for the past three years has been Permanent Secretary of the Ministry of Supply. He was created K.B.E. in 1941 and K.C.B. in 1943.

The annual dinner of the Royal Medico-Psychological Association will be held at the Savoy Hotel, London, on Wednesday, Sept. 5, at 7.30 for 8 p.m. Among the speakers will be the new Minister of Health.

Mr. Clifford Morson, F.R.C.S., will deliver a lecture on "The Present Position with Regard to Oestrogens in the Treatment of Cancer" at Whipps Cross Hospital, E., on Friday, Sept. 7, at 8.30 p.m.

Prof. A. C. Chibnall, F.R.S., will give the Procter Memorial Lecture before the International Society of Leather Trades' Chemists in the New Chemistry Building, Leeds University, on Friday, Sept. 21, at 2 p.m. His subject is the contribution of the analytical chemist to the problem of protein structure. Tickets may be had from the acting hon. general secretary, "Craigieburn," Duppas Hill Road, Croydon, Surrey.

The Tuberculosis Educational Institute has arranged a refresher course in tuberculosis for health visitors, almoners, and social workers, to be held from Sept. 27 to 29, at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C. Particulars may be had from Dr. Harley Williams, Tavistock House North. Tavistock Square, W.C.1.

Mr. E. Laming Evans, F.R.C.S., who died on April 6, left estate of the gross value of £53,494. After bequeathing his property to his wife during widowhood he directed that on the death of the survivor of his wife and his sister the ultimate residue of his estate should go to the Royal College of Surgeons of England, the income to be applied for the advancement of and research into orthopaedic surgery, " or should they refuse then to the University of Cambridge for like purposes."

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* infectious diseases were less prevalent than in the previous week: measles notifications went down by 509 cases, scarlet fever by 295, whooping-cough by 136, dysentery by 24, and diphtheria by 14.

The fall in scarlet fever was most marked in the north, Yorks West Riding reporting 53 fewer cases than last week, and Lancashire 50. The incidence of whooping-cough fell sharply in Lancashire, Essex, and Warwickshire, where, respectively, 32, 31, and 31 cases were recorded. The returns for diphtheria for the past three weeks have been 28, 38, and 52 below the lowest return of last year, which was then the lowest level ever recorded. The incidence of measles continued to fall throughout the country, except in Kent, Southampton, Essex, and Norfolk, where it remained practically stationary; these four counties contributed 31% of the total notifications.

The largest returns for dysentery were Lincolnshire 72, Essex 27, London 25, Middlesex 23, Suffolk 22, Oxfordshire 18, Lancashire 17, Glamorganshire 14.

In *Scotland* there was a general fall in the notifications of infectious diseases. Notifications were fewer than last week by the following totals: primary pneumonia 32, scarlet fever 27, measles 24, dysentery 9, diphtheria 8.

In *Eire* notifications of diarrhoea and enteritis, rising by 34, reverted to the high level of July; 54 of the 60 cases were in Dublin C.B.

Scotland's Health during 1944

The report of the Department of Health for Scotland shows a health record that compares favourably with the best pre-war years. The 1944 rates for infant mortality, stillbirths, and maternal mortality, respectively 65.0, 32.5, and 3.0 per thousand, were the lowest ever recorded in Scotland. Diphtheria notifications were high in 1940 with 15,069 confirmed cases and 675 deaths, but each successive year has shown an improvement, although the disease is still relatively prevalent, with 6,835 confirmed cases and 183 deaths in 1944. It is estimated that the incidence during 1944 was 1 in 435 for immunized children, and 1 in 190 for non-immunized children, with case-mortality rates of 1 in 400 and 1 in 18 respectively. The incidence of cerebrospinal fever is falling, confirmed cases during 1940–4 numbering 2,580, 1,868, 973, 641, and 518. During 1944 there were 4,373 cases of dysentery—almost four times the total for 1939. For the first time during the war years the notifications of pulmonary and non-pulmonary tuberculosis fell—there were respectively 7,036 and 2,512 cases. Deaths from pulmonary tuberculosis, 2,978, remained at the level of 1943, and deaths from other forms, 957, were 26 fewer. Notifications of venereal diseases are on the downgrade; the number of cases of syphilis at treatment centres was 3,542, and of gonorrhoea 4,270.

Quarterly Returns for England and Wales

The birth rate during the first quarter of the year was 17.0 per thousand, this being 0.4 below the rate for the March quarter of 1944, but 1.8 above the average of the five first quarters 1939–43. There were 10,656 infant deaths—59 per thousand live births, and 11 below the average for the 10 preceding first quarters. Deaths from diarrhoea of infants under 2 were 5.8 per thousand live births; the rates for the four preceding quarters were 4.9, 4.1, 6.4, and 4.5. The general death rate was 15.1 per thousand, compared with 13.8 for the March quarter of 1944, and 16.0 for the average of the five first quarters prior to 1944.

Week Ending August 18

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 922, whooping-cough 967, diphtheria 351, measles 1,327, acute pneumonia 275, cerebrospinal fever 39, dysentery 259, paratyphoid 4, typhoid 5, poliomyelitis 27.

No. 32

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Aug. 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945					1944 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	33	—	16	1	1	52	4	25	1	—
Deaths		1	—				1	—		
Diphtheria	346	20	95	53	18	428	18	103	64	16
Deaths	8	—	2	—	—	8	1	—	1	—
Dysentery	300	25	47	—	—	127	19	78	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	—	—	—	—	2	—	—	—	—
Deaths		—					—			
Erysipelas			40	3	—			33	9	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				60					43	
Deaths	51	7	6	13	5	70	4	14	15	4
Measles*	1,681	61	33	8	3	1,795	36	45	14	29
Deaths	—	—	1	—	—	2	—	—	—	—
Ophthalmia neonatorum	59	3	20	—	—	67	1	19	—	—
Deaths										
Paratyphoid fever	6	—	2(B)	—	2(B)	8	1	6	1(B)	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	251	13	2	3	1	356	10	2	—	3
Deaths (from influenza)	4	—	—	—	—	8	—	—	—	—
Pneumonia, primary			87	10				117	16	
Deaths		17		7	2		20		4	5
Polio-encephalitis, acute	1	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	16	—	2	2	3	12	—	9	—	2
Deaths		1					—			
Puerperal fever		2	14		—		2	9		—
Deaths										
Puerperal pyrexia‡	116	7	16	2	1	143	6	14	1	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	937	57	154	19	23	1,084	22	169	26	27
Deaths	—	—	—	—	—	1	—	—	—	1
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	6	1	4	3	4	12	—	2	23	4
Deaths	—	—	—	—	—	—	—	—	1	1
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	936	41	26	16	4	1,444	61	64	30	13
Deaths	9	1	1	—	1	14	4	2	2	—
Deaths (0–1 year)	263	38	33	28	19	328	28	30	28	11
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,668	555	478	153	113	3,972	646	499	153	106
Annual death rate (per 1,000 persons living)			10·9	9·9	§			11·5	9·9	§
Live births	5,926	733	748	377	264	6,175	491	854	278	248
Annual rate per 1,000 persons living			15·0	24·3	§			17·4	18·0	§
Stillbirths	193	16	19			197	20	39		
Rate per 1,000 total births (including stillborn)			25					44		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to movements of population, birth and death rates for Northern Ireland are still not available.

Letters, Notes, and Answers

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ANY QUESTIONS?

Persistent Pain after Spinal Analgesia

Q.—A month after amputation of the left leg under spinal analgesia 18 months ago a patient started to get pain in the region of the anus and perineum—deep-seated, constant when sitting or lying, but not present when standing. She has not got a painful stump. There is no paralysis or area of anaesthesia or hyperaesthesia. Rectal and vaginal examinations reveal nothing abnormal. X-ray examination of sacrum and coccyx is also negative. Injections of proctocaine, both deep and superficial, have made no difference. Is this a sequel of the spinal analgesic, and what further treatment can be given apart from analgesic drugs?

A.—It is very unlikely that the pain complained of has any relation (save that of time) to the spinal analgesic. Any damage to the conus or to the peripheral sacral nerves would be accompanied either by some weakness of the external sphincter or by some disorder of sensation, and any resulting pain would be unlikely to disappear when the patient stood. It is a fairly good general rule that pains which defy explanation even after the most thorough physical examination, which are unaccompanied by any evidence of organic lesion, and which do not conform to any known clinical type of pain, may be regarded as being of a functional nature and of psychic origin. Such a diagnosis in this case must be provisional and careful, and repeated examinations should be made to ensure that there is no organic lesion developing.

Unless the pain be severe no treatment is necessary; if it be troublesome analgesics may be given, but morphine should be withheld.

Significance of B.S.R.

Q.—The blood sedimentation rate in this country is usually taken as an index of the extent of activity of an exudative process. It is, however, known that the in-vitro addition of small quantities of globulin to serum greatly accelerates erythrocyte sedimentation, and the highest B.S.R. met with in medicine occurs in multiple myelomatosis—in which condition the serum globulin may reach 8%. In patients with chronic hepato-lienal fibrosis I have found a reduction of the serum albumin with a rise in the globulin fraction. Such cases often have a B.S.R. in the region of 40 mm. in the Westergren scale. Can such a reading be attributed to the changes in the blood proteins? Provided that all other investigations are negative, is it justifiable to ignore the high B.S.R. in such cases, as a sign of an active inflammatory process?

A.—Measurement of the sedimentation rate of the blood is essentially a refinement of observations on the buffy clot or crusta sanguinis, which go back to the earliest records of medical history. In Fahraeus's classical paper (*Acta med. scand.*, 1921, **55**, 1) there is an interesting account of the many theories and treatments which have been based on the sedimentation rate—for example, the humoral theory of disease and treatment by venesection. It should now be general knowledge that the sedimentation rate is merely a rough index of the colloidal constituents of the plasma in general and of the relative proportion of fibrinogen, globulin, and albumin in particular. A rapid rate of sedimentation is a normal phenomenon in the horse and the pregnant woman. In inflammatory diseases the sedimentation rate is usually raised because of the associated rise in fibrinogen. In chronic hepatic disease it is raised because of the fall in albumin and the rise in globulin. There is no evidence that this is a sign of an active inflammatory process; it merely indicates the inability of the damaged liver to manufacture albumin and the compensatory rise in globulin. Obviously, too, it cannot be ignored, as a progressive rise in sedimentation rate suggests a progressive decline in hepatic efficiency. Owing to the other factors which may affect the sedimentation rate in diseases of the liver—e.g., anaemia, changes in fibrinogen, and possibly changes in the quantity of bile salts in circulation—more accurate knowledge of the course of the disease will be acquired from the actual estimation of the plasma proteins.

In conclusion, measurement of the sedimentation reaction, as of the pulse and the temperature, is a useful criterion of illness, but one should not try to make the test bear more weight than it is designed to carry. There has been a regrettable tendency in recent years to "gild the lily" and to introduce elaborate methods of measuring, correcting, or recording the rate of sedimentation of the red cells which have little justification in theory or practice.

Urticaria and Fresh-water Bathing

Q.—Since the age of 16 a man now aged 31, otherwise in perfect health, develops a dry eczematous eruption on the inner flexures of the elbows and inner sides of thighs when he starts bathing in fresh water each summer. Exposure to sunlight without bathing does not bring it on, nor does bathing in sea-water. It develops gradually after immersion in fresh water, taking a week or so to attain its maximum, at which it remains until he gives up bathing in the autumn. Baths and showers do not bring it on. He has occasionally noticed what are probably urticarial weals on the same sites immediately on immersion, fading after his bathe. There is no history of urticaria, hay-fever, asthma, or migraine in himself or his family, and no other disease of significance. Can you suggest cause and treatment?

A.—This very unusual history is not easily explained. The mention of urticarial weals at the eruption sites might point to the form of urticaria caused by exposure to cold, in which a hypothetical dermolysin circulating in the blood stream is fixed to the cells of the skin at low temperature, reacting on warming and liberating histamine, with, in consequence, weal formation. As this would happen in both salt and fresh water it does not fit the facts. The flexural sites of the eruption may suggest an external irritant acting on a sensitive or sensitized skin, and in this connexion it would be interesting to learn whether the immersion in fresh water means in swimming pools where the water is chlorinated. This would seem, so far as the available facts allow, a possible explanation.

Climacteric

Q.—A woman aged 49 underwent a panhysterectomy for uterine fibroids 3 years ago, and it appears that no ovarian tissue was left behind. Since the operation the patient has become increasingly nervous, having occasional hot flushes, throbbing headaches, and ungovernable fits of temper. Would you indicate a course of endocrine or other therapy which might prove beneficial?

A.—The facts suggest that the symptoms are the result of the climacteric, and oestrogen therapy should be tried. Give oestrone or one of its esters 0.1 or 0.2 mg. t.d.s. by mouth for two or three weeks. If there is only limited improvement the dose may be cautiously increased, but heavy dosage with synthetic oestrogens or with natural oestrogens by intramuscular injection should be avoided if possible. The object should be to give the smallest dose which will control symptoms rather than relieve them completely. Having determined the amount necessary for this, maintain it for two or three weeks and then gradually reduce the dose, discontinuing treatment completely within 3 months. The principle of gradual oestrogen deprival should be explained to the patient and her co-operation obtained.

If the symptoms are not affected by oestrogen therapy, then a cause other than the climacteric should be looked for.

Achlorhydria and Dental Decay

Q.—Are transparency and decay of the edges especially of the upper incisor teeth after the age of 60 likely to occur in a hypochlorhydric subject? If so, is it due to the achlorhydria? Or could the taking of a dilute hydrochloric acid at one or two meals a day have any effect as a solvent? Could the condition be due to a vitamin deficiency? The textbooks suggest that the teeth are not subject to decalcification in the later age period.

A.—There would not appear to be any direct connexion between achlorhydria and dental decay. It is known that workers in chemical plants who have prolonged exposure to acid fumes suffer from decalcification of the more exposed surfaces of the teeth, and decalcification is said to follow prolonged vomiting in some cases. Theoretically the taking of dilute hydrochloric acid could produce the same condition, but would probably have to go on for many years before any clinical signs were evident. It is frequently advised, however, that the acid be taken through a tube or straw, partly to avoid the possibility.

Superficial decalcification as the result of imperfect cleaning is commonly seen in old people, but the teeth tend to become more calcified in old age, the process affecting particularly the dentine.

It is very unlikely that any vitamin deficiency could be held responsible.

Mersalyl and Cardiac Failure

Q.—*A patient has gross oedema due to cardiac failure. The response to intravenous injections of mersalyl is unfortunately becoming less, and the oedema is remaining stationary. I would be glad of advice. Could the mersalyl be combined with mag. sulph.?*

A.—Mersalyl may be given with ammonium chloride. Forty-five grains of the latter should be given in capsules of 15 grains, enteric-coated if possible, 45 minutes before the mersalyl. Intravenous injection of cardophylin (0.25 gramme) might be tried, but is not very likely to surpass the mersalyl. The intake of sodium—mainly, of course, as sodium chloride—should be rigidly controlled. Fluid intake is usually restricted to 1½ to 2 pints. This may cause arterial dehydration, for the bulk of the fluid is in the interstitial tissues. Bacon, meat, and eggs contain a good deal of sodium, and a careful diet should be laid down so that an intake of NaCl of 2 grammes daily is not exceeded. In heart failure there may be hypoproteinaemia, and dropsy may be due to this. Then full protein is needed. Removal of oedema or ascites by puncture may initiate diuresis.

Pyretotherapy for G.P.I.

Q.—*Is there any reason why pyretotherapy in the forms described by Dr. Bartley for gonorrhoea and gonorrhoeal arthritis* (JOURNAL, *Oct. 21, 1944, p. 550, and May 5, 1945, p. 642*) *should not be used in place of malaria in the treatment of G.P.I.?*

A.—There is no reason why pyretotherapy with T.A.B. vaccine should not be used in the treatment of G.P.I., but it is far less likely to be successful than artificially induced malaria. Many forms of artificially induced hyperpyrexia have been tried in this disease, but none has produced results comparable with those obtained by malarial infection, except those methods which raise the patient's temperature by physical means—e.g., the Kettering hypertherm and similar cabinets. In this connexion it should be stressed that the induction of hyperpyrexia is potentially dangerous, and should be undertaken only by one skilled in the procedure and with optimum nursing and other facilities available.

Treatment of Peptic Ulcer

Q.—*May I have information on the treatment of duodenal ulcer? Do you know of any book which deals with the medical treatment of the peptic ulcers, particularly with post-ulcer diet? All the books murmur vaguely about purées, etc., but none seems to give real practical help.*

A.—The Sippy treatment of peptic ulcer by diet and alkalis is still the standard method. Modifications chiefly concern precautions against avitaminosis and alkalosis and efforts to deal with the nocturnal secretion of acid. The drawbacks of alkalis are compensatory secretion of acid and the production of alkalosis; formation of CO_2 is not a disadvantage. After-secretion of acid is most likely to occur after strong alkalis such as sodium bicarbonate, magnesium oxide or carbonate, and calcium carbonate. These substances are also likely to produce alkalosis if used in excessive dosage. On the other hand, they are cheap and they relieve pain more effectively than the newer alkalis, such as magnesium trisilicate and aluminium hydroxide. The nocturnal secretion of acid can be neutralized by the continuous-drip method, whereby a stomach tube is passed and alkalis, such as aluminium hydroxide gel or a mixture of milk and sodium bicarbonate, are allowed to drip continuously into the stomach throughout the night. Alternatively, the patient may be roused for feeds at 12, 2, and 4 a.m. Aluminium hydroxide has no advantage over magnesium trisilicate, except in the form of aluminium hydroxide gel for continuous intubation.

Evidence of the value of alkalis in the treatment of experimental ulcers in animals is quite convincing. If the gastric juice can be continually neutralized so that the acidity never exceeds *p*H 3.5, pepsin is inactivated and ulcers heal. The difficulty is to maintain this continuous neutrality in the human stomach. Clinical gastro-enterologists have been impressed by the importance of emotional tension in the genesis of ulcer symptoms and the relief secured by rest in bed without alkalis. They therefore tend to be more interested in psychological management and sedation than in the use of alkalis. For similar reasons regularity, frequency, and adequacy of feeds are considered more important than the exact composition of the diet. In fact many diet schedules are inadequate in calories and quite needlessly complicated. Finally, as there are possibly more than a million patients with peptic ulceration in this country at the present time, treatment must be ambulant in the great majority of cases. For all these reasons treatment by diet and alkalis tends to be less strict than in the past. Details of diet will be found in standard textbooks such as Hutchison's *Food and the Principles of Dietetics* or McLester's *Nutrition and Diet in Health and Disease*. The homogenized or strained foods supplied for special diets and infant feeding by the large canning firms are now available again at most chemists' and are useful for purées. Half an hour with an intelligent dietitian will give more help on post-ulcer diets, particularly under wartime conditions, than a much longer time spent in a medical library.

INCOME TAX

Depreciation of Furniture, etc.

J. R. has been informed by the inspector of taxes that depreciation is not an admissible deduction for income-tax purposes, but that he can claim "wear and tear allowance" or "cost of renewals." The inspector suggests that as the cost and date of purchase of each item must be known for the purpose of the wear and tear allowance J. R. may find it preferable to claim renewals.

*** The wear and tear allowance is "such deduction . . . as the Commissioners . . . may consider just and reasonable as representing the diminished value by reason of wear and tear during the year." No rule is laid down as to the method of estimating the "diminished value," but the common practice is to start from the cost of the particular asset and write it down by an appropriate percentage year by year. One proviso of the section limits the final allowance in respect of the asset by reference to the amount of its cost less any sum received for it on sale. For that purpose the inspector is entitled to know the amount of the cost of each item on which wear and tear allowance is claimed, even if the Commissioners having jurisdiction in the matter are willing to depart from the normal basis of estimating "value."

Purchase of Practice

M. Y. wishes to buy a practice, obtaining a loan on terms which provide for repayments of principal out of income. Will she have to pay tax on the profits before deducting the amount of the repayment of loan?

*** Yes. Such repayments are clearly payments on "capital" account and cannot be deducted in calculating "income." In fact they represent savings in a particular form, and there is no more legal ground for deducting them in calculating income-tax liability than there would be in the case of repayment of a building society loan or even voluntary savings for investment.

LETTERS, NOTES, ETC.

Primary Cancer in Accessory Sinus

Dr. THOMAS LINDSAY, F.R.C.S.Ed., writes from St. Lawrence's L.C.C. Hospital, Caterham, Surrey: Many years ago I reported a case of ? primary carcinoma of the heart. At that time I think it was Duncan Fitzwilliams who asked if the accessory sinuses had been examined, and they had not. The other day a case occurred which at first sight looked like a primary carcinoma of the liver. The liver was very large and riddled with growths. On further investigation the primary growth was found in the maxillary antrum.

Device for Filling Blood Sedimentation Tubes

Capt. M. D. DESHMUKH, R.A.M.C., writes from Haribar: Having read in the *Journal* of May 5 (p. 632) Dr. M. M. Conrat's description of a device for filling blood sedimentation tubes I went round to our clinical side-room to show it to the medical officer, Capt. Gian Singh, I.A.M.C., who is in charge of the laboratory investigations. He showed me the method he was following, and it certainly appears to be very much simpler. It is as follows: Attach a well-fitting rubber teat to the upper end of the blood sedimentation tube and fill it like a pipette up to just above the zero mark. Put the lower end lightly on the rubber pad and adjust the level to the zero mark by pressure on the rubber teat, letting out the slight excess of blood; then press the lower end firmly, remove the rubber teat, and fix the clip.

Management and Treatment of Tuberculosis and Venereal Disease

Dr. J. L. WHITWORTH (Melbourne) writes: The report that the Central Hospital, Melbourne, requires several doctors and that the hospital and these doctors are to be engaged on tuberculosis and venereal disease mainly calls for some comment. It will be obvious even to the layman that the concentration of this infective material in the heart of a big city is unwise and unnecessary. That these diseases should be treated "in the great open spaces" should be a foregone conclusion. Further, the expense entailed and the inconvenience caused in trying to manage these diseases under conditions so opposed to the public health would be unreasonable; the aseptic technique would require to be almost fanatical; the risks of infection to doctors and nurses and staff unfair; and the end-result problematical, in spite of the superior skill and attention that would be given, perhaps to the disadvantage and detriment of medical matters elsewhere.

Corrigenda

The last line of Dr. Owen-Flood's letter in the *Journal* of Aug. 4 (p. 241) should refer to "minor epileptics" not "mental epileptics."

By a mishap at the printers the first line in col. 2 immediately under Table V in Capt. Degen's article on "Sequelae of Cerebrospinal Meningitis" last week was transposed to the foot of col 1.